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BRITISH MUSEUM NATURAL HISTORY

NOTICE.

The Committee of the Literary Society have to apologize to their Subscribers for the great delay that has taken place in the publication of this Number, which has been occasioned solely by the absence, during the last year from the Presidency of all the Members of the Editorial Sub-Committee, and the consequent interruption entailed thereby. To the same cause must be attributed the mistake in paging the present volume, which has rendered it necessary to form it into two Parts—and accounts for the alteration in the usual form of the Title-page.

For the convenience of Subscribers in the Mofussil, the Committee beg to suggest the advantage and saving of expense that would accrue to them, by directing the delivery of their copies to their Agents in Madras—to be forwarded as opportunities offer. The same arrangement would facilitate the payment of Subscriptions—an object of much moment to the Committee—as the work is published without profit at cost charges, and the funds of the Society are so extremely limited as barely to suffice for the maintenance of the Library. For these reasons the Committee earnestly intreat Subscribers who have not yet done so, to remit the amount of the last and the present Numbers to the Librarian, at their earliest convenience.

PREFACE.

The causes that led the Literary Society to suspend the publication of their Journal will be found in the summary of their proceedings appended to this No. The difficulties being simply of a financial nature, the resolution did not require the work to be entirely abandoned but contemplated its continuation in a modified form to serve as a means of preserving information possessed of local value, which but for such a receptacle would be lost or neglected. For some time however few or no contributions were received by the Committee from the idea probably that the Journal had ceased to exist. It was therefore determined to issue a Circular for the purpose of removing any such misconception, and accordingly in June last a communication was addressed by the Secretary to all the principal stations, notifying the Society's readiness to continue the publication of such original items of information as the Committee of papers might select for the purpose.

The present No. is composed of some of the communications received in consequence.

The Committee of the Literary Society do not intend to charge themselves with the duty or responsibility of Editors, nor do they bind themselves to collect and prepare matter for publication at stated intervals. Their object is confined to the reception and examination of original papers which the authors may not wish to put forward in a more ambitious shape. The Committee desire particularly to direct

the attention of their Correspondents to the transmission of Historical information connected with this Presidency, to the results of antiquarian researches illustrative of history or of the ancient manners, literature, religion and customs of Southern India, to new facts and observations in natural History, to descriptions of curious existing Customs and Institutions and to Notices of particular castes, tribes, dialects and other matters of Ethnological interest. Copies of old inscriptions on stone or copper, old coins, ancient M.S.S; Sculptures, implements or other remarkable objects that may be met with in the interior, if forwarded to the Society will likewise meet with due attention, and the Committee will use their best endeavours to have them translated, described and elucidated.

The number of copies of the Journal to be printed will depend on the number of Subscribers, for the Committee having no funds at their disposal beyond the usual subscription of Members at the Presidency for the support of the Library, it is absolutely necessary that the sale of the publication should cover its expenses.

W. M.

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RATHAS at MAMALLAIPUR

from a Sketch by Lieut.t Braddock.

MADRAS JOURNAL

OF

LITERATURE AND SCIENCE.

No. 30—*April* 1844.

I.—*A Guide to the Sculptures, Excavations, and other remarkable objects at Mamallaipur, generally known to Europeans as "the Seven Pagodas," by the late Lieutenant* John Braddock, *of the Madras Establishment. To which are added some Archæological Notes, by the Reverend* William Taylor, *and a Supplementary account of the remains at Salvan Cuppam, by* Walter Elliot *Esq. of the Madras Civil Service.—Communicated by the Reverend* George William Mahon, A. M., *Garrison Chaplain, Fort St. George.*

In the month of June 1840, I accompanied a small party of friends on a visit to the remarkable remains at Mamallaipur. As our excursion, from its necessary brevity, was likely to prove one of amusement rather than of antiquarian research, and the large quartos of the Asiatic Society are somewhat cumbrous, we borrowed from our friend Mr. Braddock a little pamphlet published by him some years before, which at once served as a guide to what was worth seeing, and explained to such of us as were but slightly acquainted with Hindu Mythology the subjects and allusions of the various sculptures.

On our return I expressed to Mr. Braddock a desire that he should undertake a fuller account of the place, and suggested that it should combine the useful and entertaining properties of a Guide Book with the more important lucubra-

tions of the scholar. As topics for the latter I named a more satisfactory account of the Inscriptions, and some information, if obtainable, as to the History of Mamallaipur and the origin of the excavations and sculptures. With his habitual modesty he seemed to doubt his competency to deal with the latter subjects, but promised to revise and dilate his former paper. I then suggested that he should solicit the assistance of his old and valued friend, the Rev. W. Taylor, in ascertaining something of the history of the place. This gentleman, so well known as an accomplished oriental linguist, having been recently engaged in the examination of the Mackenzie MSS., might, I thought, have discovered amongst them some information tending to throw light on so interesting a subject. Mr. Taylor, it will be seen, has responded with equal good feeling and ability to the request so made to him; and his notes appended to Mr. Braddock's paper, must be considered as a most valuable addition to it.

As Mr. Braddock proceeded with his work he forwarded the rough sheets for my perusal, with a request that I should suggest any alterations which my more recent visit to the place might enable me to do. The paper was scarcely completed, no time had been granted for revision, I had not even seen its concluding sheets, when the amiable and talented writer was hurried away by one of those rapid attacks which disease sometimes makes on European constitutions in this climate: and I was called on, all but unexpectedly, to perform the last sad offices for one whom I had so recently seen usefully and actively employed. A marble tablet erected in the Church at Vepery by public subscription, serves to perpetuate the memory of this worthy man; and at the same time to evince the general sense of his Christian virtues, of his scientific acquirements, and of his constant readiness to employ them for the public good.

Some months after Mr. Braddock's death, I was requested

by his family to revise and prepare for publication his papers on Mamallaipur: a task which I have undertaken not without great diffidence. Had my lamented friend survived, he would, I doubt not, have made many emendations in them, which cannot on many accounts be done by another hand.

It will be seen that neither Mr. Braddock nor Mr. Taylor has treated of the *Inscriptions* at Mamallaipur, otherwise than incidentally. Those who wish for some account of them, may be referred to the valuable article by Dr. Babington in the 2d Volume of the Transactions of the Royal Asiatic Society. He says that he noticed three kinds of inscriptions at "Mahamalaipur," two of which have remained undecyphered, and that it is highly probable that there are other kinds to be met with in the neighbourhood. The first he alludes to is an ancient Tamul Inscription on a face of rock, by the side of the inner entrance to the Varáha Swami Pagoda (No. 29 in the Map.) He gives no copy of it, but states that "it records a grant to the "Varáha Swami Pagoda of a quantity of land." The language of this inscription renders it doubtful whether it is of earlier or later date than some of the others, which are in Sanscrit. Dr. Babington says that throughout this Tamul inscription the place is called "Mahamalaipur," which he translates "city "of the great mountain," adding that the word Maha may imply "greatness of sanctity or renown." This if correct might be adduced as proof of the more recent age of the inscription; for the hill is by no means remarkable, otherwise than for the "sanctity or renown" which the sculptures may have procured for it. It will be seen however that the Rev. W. Taylor speaks of two inscriptions, in which the place is called Mamallaipur, with two *l*'s, and if this orthography is correct, which he seems to think it is, the translation of Dr. Babington is of course overthrown, since mallai does not mean "hill." The present name of the place in common use appears to be Mavalavaram, and not Maha-balipuram, as some have stated. The latter mistake can scarcely be regretted however by those

who have perused the pleasing fiction which the poetical talent of Southey has embodied in his "Curse of Kehama."

The second kind of inscription mentioned by Dr. Babington, appears in the temple dedicated to Gánesa, situated near the north end of the hill, and described in its order by Mr. Braddock. By the assistance of his Jain Brahman in decyphering the characters Dr. Babington was enabled to translate this inscription; and as it appears that much of the substance of it is repeated in some other inscriptions which he subsequently examined, it may prove interesting to copy his translation in this place. It consists of ten *slocas* decyphered, and there remains undecyphered, about as much as would make two *slocas* more.

Translation by Dr. Babington and his Jain Brahman of the ten first slocas in the Sanscrit Inscription found in the Ganesa Pagoda at Mamallaipur.

"1. May the cause of creation, existence and destruction, which is "itself without cause, the destroyer of Manmadan (*desire*) be propitious "to the desires of the world.

"2. May he who is united with UMA, of many kinds of illusion, with- "out quality, the destroyer of evil dispositions, of incorruptible wealth, "the Lord of CUBERAN, be counted excellent.

"3. May that deity (SIVA) protect us all, who is the seat of prosperity, "and by whose means CAILASA disappeared and descended to Pátála, "yielding by its weight, which he caused on account of its being with "(*supported by*) the ten faced (RÁVANAN).

"4. May he who bears SIVA in his mind engrossed by devotion, and "the earth on his shoulders, with as much ease as if it were an ornament, "long prevail.

"5. By that king of satisfied wishes, with crowds of conquered ene- "mies, who is known by the name of JAYARANA STHAMBHA, this building "was made.

"6. May that fear-inspiring, good-giving, desire-destroying SIVA, to "whom the earth, space, moon, fire, the sun &c. are a body, be victorious.

"7. The good-faced among nations *(the beauty of the world)* sprung "from a mother bringing forth heroes, remains without doubt in a place "of lotuses, full of sacred waters, and is adorned with all sorts of preci- "ous stones.

"8 and 9. SIVA the beautiful, sits in the broad lake Siras, which "teems with *(is a mine of)* lotuses, resembling variegated gems, and is "full of water for sprinkling the fortunate and much-loved KÁMARÁJA, "who puts down the pride of his enemies, who is the source *(receptacle)* "of glory, and is earnest in worshipping SIVA.

"10. He (KÁMARÁJA,) who dwells on the heads of Kings, caused "this temple of SIVA, which resembles the temple on Cailásá to be erect-"ed for the happiness of the earth."

Three additional inscriptions were sent to Dr. Babington, by some Madras friends; one by Colonel DeHaviland from the "north side of a verandah of a pagoda (No. 30 in the map) "excavated out of the solid granite, two miles north of the place." Of these Dr. Babington says "all these inscriptions differ "in character from each other, but agree precisely in matter; "and it is remarkable that the *slocas* of which they are com-"posed, are, with the exception of the last, contained, though "in different order, in the inscription copied by me from the "wall of the Ganesa Pagoda." "My inscription, is in a cha-"racter differing again from any of the rest." "The other "inscriptions consist of five *slocas* only, with some undecy-"phered portions." "The first three *slocas* in my inscription "are not found in the others; my fourth *sloca* is the same as "theirs. The fifth, sixth and seventh *slocas* of my inscription "are wanting in the others. My eighth and ninth *slocas* are "their first and second, and my tenth is their third. Their "fifth *sloca* I have ascertained after a very careful comparison, "to be quite different from the undecyphered portion of my "inscription. Its translation is as follows:

"ATIRAŃACHANDA *(he who in battle is very furious)* Lord of Kings "built this place, called Atiranachandéswara. May SIVA the beloved, "accompanied by the daughter (PÁRVATÍ) of the snowy mountain, by "CARTICEYA, and their suite of deities, be present in it for ever."

The third kind of inscription is found over the figures on the monolithic temples to the south of the village. So completely have these characters become obsolete, that none of the learned natives consulted were able to decypher them.

After considerable trouble Dr. Babington himself succeeded in doing so.

It might reasonably have been expected that these Inscriptions would have thrown some light on the origin or probable age of the sculptures, excavations and themselves. They afford no very precise information at all. The appellations given to the prince or princes who "caused the erections," are mere epithets, by which no individual can with certainty be identified, (vide Mr. Taylor's note *d*); and were it possible to do this, the chronology must still be in a very great degree theoretical. I perfectly agree in opinion with Mr. Taylor that there is little in the sculptures themselves, if we except the Rathas, the Varáha Swami Pagoda, the Ganesa temple and the temple at Salvan Cuppam, to justify the supposition of their very great antiquity. Most of them are in the most perfect preservation, and present a freshness of appearance which creates an involuntary idea of their almost recent execution. The subjects of the sculptures too are an evidence that they are not of very remote antiquity. They are representations of various personages and incidents in Hindu mythology, and are chiefly borrowed from the famous poem the Mahabharata. This and the language of the inscriptions which is Sanscrit, or Tamul with Sanscrit derivatives, mark the presence of the Brahmanical faith. Now it appears from Mr. Taylor's researches that previous to the Seventh Century of the Christian Era, the whole of the district in which Mamallaipur stands was occupied by thv Curumbas, a half-civilised people of the Jaina religion; and it was about that period or probably later, that under the auspices of Adondai, a prince whose capitals were Conjeveram and Tripeti, the Brahmans were introduced into this part of the country. The extent of the works, and the labor and expence bestowed on them seem to indicate a long established Brahmanical influence; and it will be seen, from Mr. Taylor's note (c), that an historical paper amongst the Mackenzie MSS. affords grounds for supposing that at least

some of these excavations &c. were executed so lately as the Seventeenth Century, by a prince denominated Sinhama-nayadu. The supplementary paper by Walter Elliot Esq. relating to the remains at Salvan Cuppam, serves to suggest a much earlier date than the latter for certain of these remarkable productions which he therein specifies.

Works of this nature have been executed in all parts of the world during the earlier stages of civilization. Rocky caves formed by nature offer a congenial shelter for the gloomy rites of a dark superstition, a ready defence from the attacks of enemies or the inclemency of the weather, and supplied appropriate receptacles for the remains of the dead. In the most ancient times the Holy Scriptures speak of caves as places of residence and refuge, as well as of sepulture. Many of these natural recesses were greatly enlarged and rendered more commodious, or better adapted for the purposes of shelter and defence by human labor and art. This may still be traced in several countries of the East. Maundrell has described a cave near Sidon, whose sides contain two hundred smaller caverns. Sir R. K. Porter has given an interesting account of a cavern or labyrinth in the mountain of Kerefto, in Eastern Courdistan. Similar excavations are found according to the same authority at Maraga in Media; in the mountains near the lake Sivan, and near the site of Artaxata, the ancient capital of Armenia. The sepulchral caves of Egypt have been admirably illustrated by Belzoni. Sir Alexander Burnes has given an interesting account of the sculptures and caves at Bameean. Those at Elephanta and Ellora are well known in India: and such as are interested in these remarkable records of past times, should not overlook the description and beautiful sketches of Petra by Laborde. Amongst the savages of North Western Australia, Captain Gray has discovered sculptured rocks and painted caverns. In this way nature appears to have suggested to mankind the earlier efforts of art.

The Rathas, or Monolithic temples to the south of the village, are probably the most ancient of the remains at Mamallaipur. Their inscriptions are in a character so completely obsolete, that the most learned natives, according to Dr. Babington, are unable to decypher them. This species of sculpture is remarkable, and much more rare than mere excavations. It was however practiced by the ancient Egyptians, and Herodotus (Lib. II. cap. 155) has given a short description of a monolithic temple of Latona, which stood at Buto, near the Sebennytic mouth of the Nile. He says it measured 40 cubits or 60 feet in height, breadth, and width: and its roof consisted of a separate stone, four cubits high. This temple, which must have been conveyed to its site, must have weighed on the lowest computation upwards of 5000 Tons. At the 175th chapter of the same book, he describes another monolithic temple at Sais, which had been brought thither by king Amasis from Elephantine, the island opposite Syene, immediately below the first cataract; a distance of twenty days sail, or of 700 miles by land. The outside measurement of this monolith he states to be—length 21 cubits, breadth 14, and height 8: the inside measurement was—length 18 cubits and 1 pygon; breadth 12 cubits; and the height 5 cubits. Taking the cubit in round numbers at 1 foot 6 inches and the pygon at 1 foot 3 inches, the temple must have been externally 31 feet 6 inches long, 21 feet broad and 12 feet high: and internally 28 feet 3 inches long, 18 feet broad, and 7½ feet high. This monolith then was inferior in point of mere size to the largest of those at Mamallaipur; the dimensions of which externally, according to Mr. Goldingham, are as follows;—length 49 feet, breadth 25 feet, and height 25 feet. But we must remember that while these are in loco naturæ, being cut in fact from large boulders or distinct masses of granite, the monolith of Amasis had to be conveyed to its site by manual labor; and Herodotus affirms that two thousand boatmen were occupied in its removal for a period of upwards of three years. After all indeed it was not placed

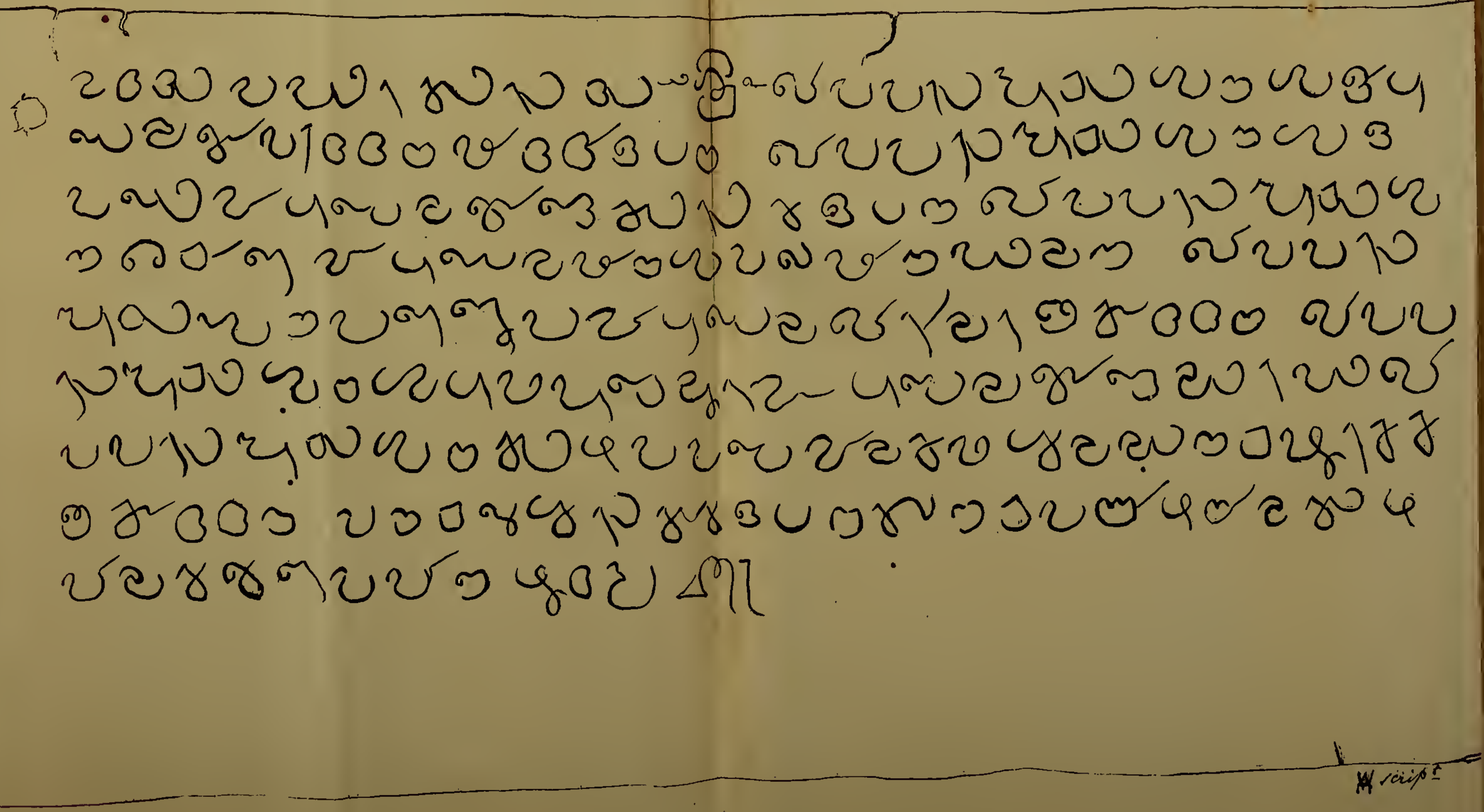
precisely where the king had proposed; for which two reasons are assigned. First that the architect, weary of the labor and time expended on the work, heaved a deep sigh as the workmen were dragging it forward; which Amasis interpreted as an unfavorable omen: and secondly, that one of the workmen, having unfortunately fallen under the moving mass, was crushed to death, and on this account it was allowed to remain where it then was. Mr. Burton in his excerpta (plate 41) gives a representation of a similar monolith said to be of the same king, and found at Tel-et-mai. This measures externally 21 feet 9 inches high, 13 feet broad, and 11 feet 7 inches deep: and internally 19 feet 3 inches high, 8 feet broad, and 8 feet 3 inches deep.

The Sculptured Rocks at Mamallaipur, (on which is represented the penance of Arjuna,) are by no means without their parallel. This primitive application of the art of sculpture seems an obvious mode of perpetuating the memory of events, historical or mythological, and has been adopted from the earliest ages. On the rocks of the river Lycus, near Beirout in Syria, are still to be seen the figure in relief, and the name inscribed, of Remeses the great king of Egypt, who is supposed to have flourished about B. C. 1350, and was therefore contemporary with Ehud and Shamgar mentioned in the book of Judges: but early Egyptian chronology is so exceedingly uncertain, that the era of Remeses must always be conjectural. Not far from this is another sculpture of a Persian king, and an inscription in the arrow headed character, which not having been yet decyphered affords likewise no conclusive evidence as to its age. Copies of these have been made by Bonomi. No Christian can have forgotten the exclamation of Job, "Oh that my words were now writ-"ten! Oh that they were printed in a book! That they were "graven with an iron pen and lead in the rock for ever!" (chap. xix. 23, 24.) And from some remains in the wady

Mokatteb, and in other valleys near the mountains of Sinai, it would seem that the art of "engraving" on rocks is in those regions of great antiquity. Figures of men and animals accompany those inscriptions; the characters of the latter are for the most part unknown in the present day. These inscribed rocks extend in one place for about 3 hours march, and are mentioned by Burkhardt, Laborde and other travellers.

At Be-Sitoon, near Kermansheh in Persia, is a stream above whose fountain head is a projecting rock containing the remains of an immense piece of sculpture. The great antiquity of this interesting relic is evidenced by the successive mutilations it has suffered, to afford room for subsequent inscriptions, as well as by the ordinary operations of time upon both it and them. By Mr. Macdonald Kinnier this bas-relief has been supposed identical with one spoken of by Diodorus Siculus, on the authority of Ctesias; who certainly had peculiar advantages for obtaining accurate information connected with Persian tradition and history. He says, "we are informed by Diodorus Siculus that Semiramis in her march to Ecbatana, encamped near a mountain called Bagistan in Media. She cut out a piece of the lower part of the rock, and caused her image to be carved upon it, and a hundred of her guards that were lanceteers, standing round her; she wrote likewise in Assyrian letters on the rock, that Semiramis ascended from the plain to the top of the mountain, by laying the packs and fardles of the beasts that followed her one upon another." There are many points of resemblance between the mountain of Be-sitoon and that of Bagistan described by Diodorus Siculus; and supposing Mr. Kinnier to be right in his conjectures, we have here the remnants, for they are unfortunately no more, of a bas-relief executed at the lowest computation 800 years before the Christian Era. Throughout ancient Media and Persia sculptured rocks, of various ages, repeatedly occur: a great many of

Facsimile of the Copper Grant belonging to the Jews of Cochin.



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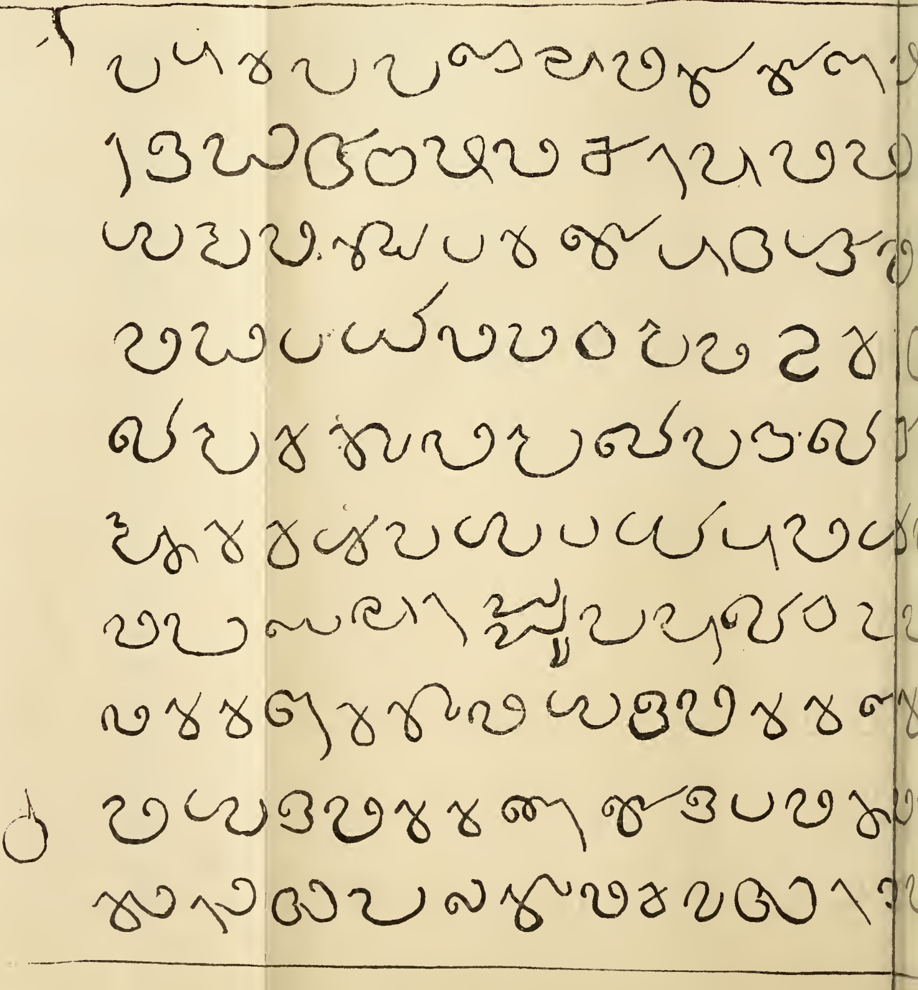

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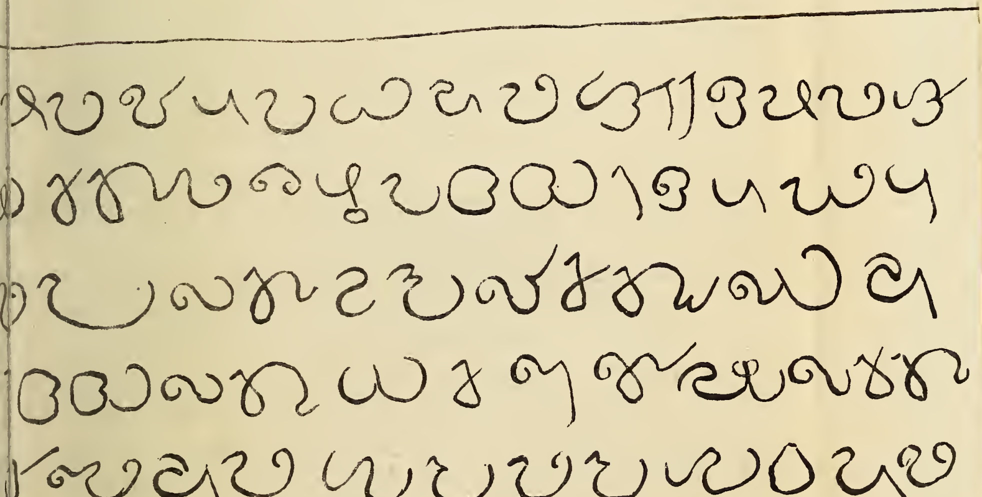

scrips^{t}.

BRITISH MUSEUM
NATURAL HISTORY

these bas-reliefs however appear to belong to the Sassanian Era: (from A. D. 226 to A. D. 632.)

These introductory notes have I fear already become too long and tedious; it only remains therefore that I acknowledge my obligations to Walter Elliott Esq. of the Madras Civil Service, to whose friendly kindness I am indebted for the very valuable supplementary paper on the remains at Salvan Cuppam, as well as for a map of Mamallaipur, drawn in 1808 by Colonel Mackenzie. The latter I have reduced, and by numbering the several objects both in it and in Mr. Braddock's description, I have endeavoured to render the whole a more useful guide to those who may dedicate a few spare hours to a visit to this interesting spot. The sculptures are for the most part such as to mark no very advanced state of art. They possess none of that finished elegance and refined taste, and but little of that purer poetic spirit, which characterize the productions of Europe. Still they are highly deserving attention as the best specimens of native skill to be met with I believe in Southern India; and will not be undervalued by those who are capable of comprehending the extent to which art, even in its earliest infancy, has contributed to the civilization of mankind.

G. W. M.

FORT ST. GEORGE.

Lieutenant Braddock's Guide to the Sculptures, Excavations &c. at Mamallaipur

I shall commence my account of these curious sculptures and ruins with a small dilapidated temple built within fifty yards of the northern termination of the hill. (No. 1.) It is a rectangular building of plain hewn stone devoid of ornament: 24 feet long, 15 feet broad and about 12 feet high. It has two apartments, the innermost of which contains a black stone Lingam, neatly executed and in good preservation, notwithstanding that from the absence of roofing it is exposed to the weather. This temple is completely overshadowed with trees, which have taken root in the walls, and whose branches forcing their way through the joints of the stones have contributed much to its dilapidation and present ruinous appearance.

At a short distance to the eastward of this Pagoda, lies the *Group of Monkies* (No. 2) spoken of in the Asiatic Researches, in an account of this place written in 1784. The group, now much buried in the sand, consists of a male, a female and a young one. The male monkey with a laudable love of cleanliness is studying the head of its partner with the most friendly attention, and the young one is satisfying its hunger. At a little distance lies a mutilated figure of Ganésa or Pillaiyãr, the Hindu God of highways &c. of whom I shall speak presently.

Looking towards the south, a *loose mass of rock* (No. 3) will be seen resting on a slope of the hill, apparently on so mere a point, that it seems as though a small force would dislodge it and roll it headlong on the plain. Its circumference is 68 feet and its height about 25.* From the eastward it has a circular appearance; from other points of view its figure is irregular.

* Mr. Goldingham gives its diameter as 27 feet.

On the western face of the northern termination of the hill, not far south of the pagoda just described, may be found, after a little search, a circular cistern cut out of a solid stone. It is 8 feet 6 inches in diameter and 4 feet deep, but cracked.

Near this cistern the face of the rock is carved and ornamented to the extent of 28 feet in length by 14 feet in height. There are 3 *large excavated niches* (No. 4) with a flight of 4 steps leading into each. Figures are sculptured on each side the entrances. The centre or principal niche contains a figure of Mahadeva and four other figures cut on the back wall. The other two niches contain a figure of Vishnu and four others. This rock faces the north-west, and to the right, or south, of it, is an imperfect representation of Dũrga, eight-handed, and trampling under foot the head of Mahishasura, whose story will be told presently. On the eastern face of this rock are carvings of a well proportioned elephant 5 feet high, and the heads of three smaller elephants, with those of a monkey and of a peacock. The communication between the eastern and western faces of this rock is through a cleft at the north end of it.

At a short distance in a south-westerly direction from this place is an *excavation* in the solid rock (No. 5) measuring 22 feet long, 9 feet 6 inches deep and 8 feet high. The top is supported by two plain, strong, square pillars. It contains a square niche, on each side of which is a figure, probably that of Parvati, a goddess who will be introduced to the reader presently. This excavation is on the western face of the hill, which is a continuous range of granite masses.

Still keeping on the same side, at 100 or 150 yards southward from the last excavation we come to *another* (No. 6) containing five niches, with steps leading into three of them ; and two rows of pillars, four in each. This excavation is 36 feet long, 16 feet deep, and nearly 10 feet high. The niches con-

tain each a kind of recess, (intended probably for a group of figures,) and a circular trench, (intended probably for Lingams.) A figure is carved on each side of all the niches at the entrance. Four steps lead into this temple which faces north-west, half-west.

Adjoining is a *rough excavation* 36 feet long, 10 deep and 10 high. In the middle is a large niche, also rough. About 12 feet of the rock appear to have been cut away before sufficient height was obtained for the front. This occurs in other places also; and a platform or level space, is thus formed in the rock in front.

About half a mile westward, at the western extremity of the Palmira tope which is on the west of the hill, there are three small unfinished temples sculptured out of solid detached masses of stone, (No. 7): but as more elaborately finished and larger temples of the same description will be described hereafter, I shall not dwell on these smaller ones. I would now lead the reader back to the large stone before described as resting on the slope of the rock on the eastern side of the hill. (No. 3.)

Proceeding southerly from this stone you presently arrive at *a temple* fashioned out of the rock, (No. 8) and ornamented according to a style of architecture wholly different from that of this part of India in the present day. The top is elliptical, and bears considerable resemblance to the gothic style. The pillars which support a verandah on the western side, are I think similar to columns which I have seen in the sketches of Egyptian Ruins by M. Denon. This temple is 28 feet high, 20 feet long and 11 feet 6 inches broad. On the western face, at what may be called the foundation, there is a rent in the rock, which causes the temple to incline a little out of the perpendicular towards the south east. This handsome structure (if so it may be termed), has a verandah

and a niche, the latter containing an image of Ganésa, which blackened by smoke and ghee, is still an object of adoration to the people of the village. Their brahmans, I was told, propitiate the stone deity every Friday with lustrations of ghee and cocoa-nut oil, and certain rites and prayers. The inner wall of the verandah, south of the niche bears an inscription in the same kind of character as that hereafter noticed. According to Dr. Babington, (Transactions Royal Asiatic Society vol. 2, p. p. 265-6 and plate 14), this inscription consists of verses in praise of Siva.* I have stated that this temple contains an image of Ganésa, and as this is the second time that Ganésa has been mentioned, it may be right to state, who and what he is.

Colonel Moor, in his Hindu Pantheon, says—that Ganésa is the God of prudence and policy, and the reputed eldest son of Siva or Mahadeva and Parvati. He is represented with an elephant's head; generally with four hands, but sometimes with only two, and sometimes with six or eight. He is said to be propitiated by Hindus of all sects in the outset of any business: if a house is to be built, a book written, or a journey commenced, Ganésa is invoked.

It is very common for Hindu authors to give different versions of the same tale, and there are different accounts of the manner and cause of Ganésa's possession of an elephant's head. One relates that Vishnu and Ganésa fought, and that Ganésa would have been triumphant, but that Siva (his father!) cut off his head: whereat his mother Parvati, being very much distressed and offended, proceeded to revenge the act by performing such austerities as, had they continued, would have deranged the destinies of the universe. This alarmed the whole congregation of the Gods, who intreated Siva to restore Ganésa to life. He con-

* See Dr. Babington's translation of this inscription in the introductory notes. M.

sented to do so, but the severed head could not be found: it was determined therefore to place on the headless trunk, the cranium of the first animal they met with, which proved to be an elephant. There is another story to this effect, that Mahadeva and Parvati quarrelled; their quarrel was followed by a reconciliation; and their reconciliation by the birth of Ganésa. On this joyful occasion all the gods came to congratulate Parvati; but one of them, whose name I have forgotten, kept his eyes cast down and forebore to look up. The goddess observing this asked him the reason of it; when he told her that he was doomed to injure whomsoever he looked upon, and therefore would not venture to look on the child. Parvati would not believe that any injury could be done, and urged him to admire her beautiful Ganésa. But no sooner did he lift up his eyes, than the child's head vanished. This unexpected result astounded Parvati, who had no sooner recovered from her first surprise, than she gave such passionate vent to her feelings, that Vishnu, apprehensive of the consequences, flew to the banks of the Ganges, and brought thence the head of an elephant which he placed on Ganésa's shoulders.

Passing the north western front of the temple just described, and following the foot-path, which leads through a narrow acclivity, formed by rocks and bushes on either side, we come to *an excavation* with a very pretty frontage, on the left hand. (No. 9.) It is hewn in the side of the hill, is 22 feet long, 11 feet deep, and 10 feet 6 inches high. Of this excavation and of the imagery within it, plates are given in the 2nd Vol. of the Royal Asiatic Society's Transactions.

On the wall at the right hand, or south-west end, there is a group of figures representing the Váman-Avatára, or fifth incarnation of Vishnu, undertaken by him to punish pride and presumption. The story is this:

Mahabali, a prince who lived in the Tréta yuga, or the

second age, was so elated by his prosperity, that he omitted to perform the more essential sacrifices to the gods. This being highly offensive to them, Vishnu, determined to check so bad an example, became incarnate and assumed the form of a wretched Brahman dwarf. Mahabali was at that time in possession of the whole universe, having previously acquired this dominion in consequence of his signal piety, or punctual performance of certain austerities and rigorous acts of devotion. Vishnu, in the shape just mentioned, appeared before him, and asked as a boon so much of his wide possessions as he could pace in three steps. This the monarch readily undertook to grant, at the same time desiring him to ask something more worthy for a prince to bestow. The pretended Brahman however professed his content with what he had already requested, and the king proceeded to ratify his promise by pouring water into the petitioner's hand, which was, it would seem, the most solemn mode of confirming a grant. As he was doing this, the size of the dwarf grew larger, and continued to expand until it filled the whole earth. Vishnu then discovering himself, deprived Mahabali in two steps of earth and heaven; but in consideration of his previous virtue and general good conduct, he deprived him of no more, but left to his government the kingdom of Pàtàlam, a lower or inferior world said to be the abode of serpents. Some say that the water used in this transaction for the purpose of ratification, fell from Vishnu's hand on the head of Siva, and flowing thence, formed the origin of the Ganges.

Vishnu in this character is sometimes called "Trivik-rama," "the three step taker." In this sculpture he is represented eight-handed, and in the act of stepping prodigiously: the right foot is on the ground and the left is raised sideways as high as his head. It looks therefore, as it is, very unnatural, for the articulation of the head of the thigh bone in its socket would not admit of such a position. The subordinate figures

do not appear to illustrate the story, or at least the version above given of it. Perhaps another circumstance should be related, and the imagination may be allowed under some restriction to be the interpreter: but even then only a part of the figures seem to be connected with the tale.

It is said that Sucra, regent of the planet Venus and guru of the asurás, acting as mantri, or minister, of Mahabali, faithfully informed the king of the deceit that was being practiced upon him. There is a figure with a dog-like head speaking to another, who seems to rest his chin on his right hand in deep reflection. These two figures occupy the upper part of the sculpture on the left of Vishnu. Below them are two figures in human shape represented as falling. Perhaps the former may represent Sucra and Mahabali at the moment when the Prince was first made acquainted by his counsellor with the true character of the Dwarf, but was too proud to withdraw his royal pledge: and the latter the same after he had fallen from his high estate: or the two falling figures may imply that the two steps of Vishnu had deprived him of the dominion of heaven and earth. What the rest of the figures may illustrate I do not conjecture.

On the wall of the opposite or north-eastern end is a sculptured delineation in bas relief of the Varah avatara. Among the legendary stories of the Hindus, several different accounts are given of Vishnu's reasons for taking on himself this incarnation, and particularly why he assumed the shape of a boar. Among others it is said that a Daitya, or evil spirit, named Hiranyacsha, gained from Brahma by his scrupulous piety and the performance of penances of very great efficacy, a promise that he should have given to him any thing he asked. Accordingly he desired universal dominion, and exemption from being hurt by the bite or power of any living creature. He enumerated all animals and venomous reptiles, that bite or sting, except the boar which was forgotten. His ambitious desires were no sooner obtained than he became exceedingly

presumptuous, proud and wicked; and forgetting the great power of the gods, he ran away with the whole earth, and plunged it and himself into the depths of the sea! This singular exploit made the interposition of the preserving power necessary; and Vishnu changing himself into the form of a boar, plunged into the ocean; fought a dreadful battle which lasted a thousand years; at length slew the impious daitya; brought back the earth on his tusks, and restored it to its usual good order, peace and tranquillity.

The sculptures illustrative of the story appear to refer to a period subsequent to the battle, for the figures supply the imagination with the idea that the boar-headed deity is now solacing himself after the toils and dangers of his thousand years' conflict. The principal figure, Vishnu (four handed), is executed with considerable spirit. He stands firmly on the left leg. The right leg is raised and the foot rests on the head of another figure. On the right knee sits a female; Vishnu's left hand grasps the small part of her right leg, while his right hand passes behind her, a little lower than the waist, while he regards her with interesting pig-headed gravity. His two remaining hands hold a conch shell and the chakra*. Below Vishnu's right leg is the upper portion of a figure with the hands raised as in prayer, its lower part being immersed in what may be supposed a representation of the waves of the sea, (the rock being here very rough and unfinished. Another figure, rising out of this imaginary water, is also in a posture of supplication; and there are other accessaries but they do not appear to explain the story.

From the back wall of this excavated fane, is a projection measuring 7 feet 9 inches broad, and 3 feet 6 inches deep. It contains an empty niche, in which however may be traced the outlines of a deity, which the chisel of the workman has not brought into being. A flight of three small steps leads

* The chakra is a circular piece of metal, not unlike our discus or quoit. M.

into the niche, and on either side its entrance, as well as at each end formed by the projection, is a figure in bas relief, with the name, attributes, or office of which I am unacquainted.

Sculptured on the back wall between this niche and the north east end of the excavation, is a female figure, probably Devi or Parvati the consort of Siva, bathing. She is attended by her females and two elephants, one of which is pouring a vessel of water over her, and the other is receiving another vessel from the hands of one of her attendants.

On a similar space to the south of the niche is another female figure, which I take to be a representation of the same great personage; in this however I am not positive. On each side of the principal figures, are two bulky little fellows, and a fourth figure of a more natural size. There are also two heads of animals, one somewhat similar to an antelope's, the other intended perhaps for that of a tiger.

The front of this excavation is supported by two columns, and two pilasters of a handsome style of architecture. The ceiling is ornamented with flowery sculpture, but has several cracks in it running lengthways; *i. e.* in a north-east and south-westerly direction.

About eighty yards west of this place, on the top of the hill, may be found after a little research, the stone bed, with a lion for its pillow, which, in the account published in the Asiatic Researches already alluded to, is called the Dherma-râja's lion throne, (No. 10); and at a trifling distance S. W. of this, is the bath of Draupadi. The lion and bed measure in length 9 feet 6 inches, and in breadth 3 feet 6 inches; the lion is 18 inches high, and stretching across the south end appears as if intended for a seat or pillow. The bed lies due north and south, and is hewn out and fashioned on the surface of the solid rock. There is not the least appearance of the

place having once been an apartment of a palace, as intimated in that account: the top of the hill hereabout is indeed quite uneven and irregular, and abounds with immense blocks and masses of granite.

There is nothing more which merits notice on the surface of the hill, if we except numerous mortice holes, which may be seen running parallel to its western edge, and many small flights of steps cut in several parts of the rocks.

Leaving the top of the hill, and descending by the path in front of the temple last mentioned, at a few feet south east of the pagoda which contains the image of Ganesa, will be found sculptured in bas relief, on the eastern faces of two large rocks, the *story of the Tapasa* (No. 11) or intense penance of Arjuna. These two rocks adjoin each other, being divided only by a fissure. They measure 84 feet in length, and about 30 feet in height.

In this group of sculptures, the principal figure, that of Arjuna, is not the largest. He is seen on the left of the fissure in the posture of penance; his arms are raised above his head, his right leg is lifted up. He is supposed to stand on the great toe of his left foot. His arms and right leg appear withered, but his left leg is of the natural size. His chest and ribs are prominent, but the stomach and abdomen sunken; the whole figure representing emaciation from long fasting. Besides this figure there is a multitude of others both of men and animals; and among the latter two well proportioned elephants as large as life. The largest of them measures 17 feet from the proboscis to the tail, and 14 feet in height. The smaller is in height 10 feet, and in length 11. Under the belly of the larger elephant there is a small one, with the heads and trunks of two others, while the head of a fourth is seen between his proboscis and fore feet. These figures of elephants are cut on the right hand rock on a level with the ground. On the rock to the left, near the fissure, and below

the figure of Arjuna, is a neat little temple,* with a niche and a figure in it. Just within the fissure itself is a figure like that of the Mermaid, but in the native languages it has a name purporting half woman and half snake. Scattered over the face of both rocks there are many representations of men, ascetics, monkeys, lions (or what are meant for lions), tigers, antelopes, birds, satyrs and monstrous animals which it would puzzle a naturalist of the present age to nomenclate. The whole are executed with considerable spirit, and occupy a space of about 2400 square feet. A plate giving a representation of these sculptures is published in the 2d Vol. of the Transactions of the Royal Asiatic Society of Great Britain and Ireland.

The story of the penance of Arjuna may be told as follows: The five sons of Pándu rája lost their dominions in play with their cousin Duryódhana; who however played unfairly and won through "guile and wicked stratagem." The consequence was that they and their followers were banished for twelve years and upwards, and were doomed to wander in jungles, wilds and solitudes. During this period the elder brother took counsel with the others, how they might repossess themselves of their patrimony after the term of banishment had expired: and in order to attain this it appeared desirable to gain the *mantra* Pasupatástra. This mantra, or incantation, was of such wonderful efficacy, that if it was uttered while in the act of shooting an arrow, the arrow became inevitably destructive, and moreover possessed of the power of producing or generating other weapons, which not only scattered death on all sides, but were able to cause the destruction of the whole world. This mantra could be obtained only from the god Isvara, (a name of Siva); and

* At the South East corner of this little fane, in a sitting and stooping posture, and entirely detached from the rock, is an admirable figure of an ascetic, miserably emaciated, which though somewhat worn by exposure to the weather, bears evidence to the talent, skill, and anatomical knowledge of the Artist. M.

Arjuna, as he was distinguished among his brethren for his prudence, fortitude, and valor, was employed to procure it.

The hero of this story had to travel far to the north of the Himâlaya mountains, there to perform austere and rigid penance in order to propitiate the god and obtain his favor : and as a preparatory measure, he was instructed in all requisite mantras and mystic ceremonies. On reaching the appointed place he found a delightful retreat ; a grove or forest abounding with streams and fruits and flowers, with whatever could regale the senses or charm the eye. Not only was the earth most bountiful, but the air was filled with the strains of celestial melody. In this place Arjuna commenced and carried on his austerities by meditation, by prayer, and by ceremonial purification.

During the first month he ate but once in four days : during the second month, but once in seven days : during the third month, only once in fourteen days : and during the fourth month he did not eat at all, but completed his penance by standing on the tip of his great toe, the other leg being lifted from the ground, and his hands raised above his head. This is the period of the penance which the sculptor has selected for illustration, in the curious work now under notice. The figure of Arjuna is exhibited in a posture agreeing exactly with the story, the relation of which however it seems necessary to continue a little further, in order to explain the accessories, the figures of men and animals, with which the whole face of the rock is covered.

The nearest Rishis, (hermits or ascetics who by austerities and meditation may attain, as their object is, riches, power, supernatural arms, or beatitude), seeing the intense devotion of Arjuna, went and reported it to the god Isvara, who was highly gratified : but in order to try the constancy and courage of the hero, the deity assumed the form of a wild hunter. One of his accompanying attendants was transformed into a

wild boar, and Arjuna preparing to shoot it was interrupted by the unknown deity who forbade him to strike his game. Arjuna notwithstanding let fly a shaft, and so did the disguised hunter, and the boar fell lifeless. This occasioned an altercation, which brought on a personal combat; and when Arjuna had expended all his arrows on his antagonist without effect, he tore up rocks and mountains to hurl at him, but they too fell harmless at his feet. This so enraged our hero, that he attacked his foe hand to hand. Such was the daring audacity of this act, and the bold and determined courage of Arjuna, that all heaven was filled with surprise, and the beasts of the forest, and the inhabitants of the etherial regions, alike flocked to witness the contest, which was terminated by the god's revealing himself, and bestowing on his votary the boon he wished for, viz. the Pasupatástra.

This congregating of the inhabitants of the skies and of the forest, this mixture of men and brutes, makes probable the supposition that it is the second point or period of the story that has been selected by the Artist for exemplification, as instanced by the particular postures and variety of the figures seen in this curious carving.

Adjoining the sculptured imagery of Arjuna, to the south, are the wide beginnings of an excavation (No 12) having a front of 50 feet, and a depth at the north end of 40 feet and at the south end of 35 feet. A large portion of the solid rock projects from the back of the excavation 25 feet, with a frontage of 23 feet, leaving deep recesses on either side, in which stone has been left rough cut for three pillars. The front of this evcavation is supported by five octagonal columns,* whose bases are formed of figures of a grotesque horned animal: a sixth column originally existed, its base and capital still remain, but its shaft is removed. At a few feet within is a second row of six columns corresponding with those

* The capitals of these columns are not unlike those of some of the pillars of the Indra Subha at Ellora, and of the cave temples of Elephanta. M.

in front. The ground at the entrance is partly overgrown with bushes, and the cave now affords shelter to the village cattle.

A few yards south of this excavation, opposite to a street of the village is an open building, which from the sculptures it contains may very properly be denominated *Krishna's Choultry* (No. 13). These sculptures are executed on the back wall of the building, or rather that part of the solid hill which forms the back *wall.* They represent the exploit of *Krishna* supporting the mountain Goverdhana in order to shelter his followers from the wrath of Indra,—the god that darts the "swift blue bolt," the

> "Sprinkler of genial dews, and fruitful rains
> "Over hills and thirsty plains."

This action is fabled to have been performed by Krishna with one of his little fingers at the age of seven.

> "With one finger raised the vast Goverdhen;
> "Beneath whose rocky burden,
> "On pastures dry, the maids and herdmen trod:
> "The Lord of thunder felt a mightier God."
>
> SIR W. JONES.

In the present sculpture the attitude of the God corresponds sufficiently with the story. He appears however to sustain the mountain with the palm of his left hand, instead of the little finger as in the poetical version. The only representation of the supported mountain consists of a rough line running above the whole of the figures. This line has been formed by cutting away as much of the rock as would answer the purpose of giving the requisite degree of relief for typifying, in the above manner, the rugged bottom of the mountain, torn up from its foundations, and sustained aloft in the air. The whole group looks clumsy; the proportions are bad; the countenances are destitute of expression; and little praise is due to it either as a work of art or imagination. So singular a deliverance from sudden destruction ought to have

supplied the artist with a subject capable of being embodied with great spirit: but here, instead, is an inanimate, meaningless group, which, but for the principal figure, would not at all have interpreted the story. There are about twenty figures of men, women and children, and as many heads of cows or bullocks. There is one tolerable figure of a brahmany bull, and another of a cow licking its calf while in the act of being milked. It may be that the general quietude and repose of the figures are intended to imply their security from the terrible danger so recently, and still but for the god's interposition, impending over them. In another part of the sculpture is a figure playing on a flute or pipe; this may also represent Krishna, in his character of Murlidur, *the tuneful.* In this form he is called Balakrishna, and is said to have amused himself by piping to the swains and damsels of Goverdhen. This figure of Krishna is small and might be overlooked; it is situated over the hinder part of the cow and calf just mentioned. At the north end of this sculpture, raised 5 or 6 feet from the floor, is a well executed figure of a brahmany bull in full relief; and at the south end are several figures of beasts apparently intended for lions: one of them however resembles the Sphynx,* having a human face with a body of a quadruped.

Krishna's Choultry extends in front 47 feet; is 26 feet deep and 12 feet high. The roof is made of hewn stone, which is partially covered with earth; and is supported by three rows of columns, 4 in each. The bases of those in the front row consist of grotesque figures of a non-descript animal, sitting on its haunches, having curved horns, and a long tail which is curled upon its back like the figure 8.

On the hill above this Choultry is the *foundation of a rectangular building* (No 14) measuring 66 feet in length, and 42 in breadth. In the middle of this is a gateway 12 feet

* A similar figure is met with at Ellora. M.

wide, running east and west; and in the gateway are two recesses, each 12 feet square, one on each side. Near the corners of these recesses in the gateway there are four large square stone pillars, 16 feet high, 3 broad and 2 thick, with flowery ornaments. This foundation corresponds with *a similar one* (No. 15) about a hundred yards distant towards the east, in the plain below; and the two form nearly a straight line with a very ancient temple situated on the sea shore.

From the front of Krishna's Choultry, on looking towards the south west, may be seen on the top of the hill, a small *dilapidated building* (No. 16) quite in ruins.

Beneath this is an *excavation* in the side of the hill (No. 17) of a rectangular shape, measuring 25 feet long, 18 feet deep, and 10 feet 6 inches high. The front is adorned by two neatly finished pillars and two pilasters. At each end are imperfect traces and outlines of a group of figures; and on each side of the excavation in front is a neatly finished niche, 3 feet high, 3 feet deep and 2 feet 6 inches wide. In front of the whole is the skeleton of a verandah 48 feet long, 12 feet high and 12 feet wide. Steps are cut in the side of the hill, at one end of the verandah, by which there is an easy ascent to the top of it.

At a few yards distance to the eastward, is a stone bed, with an elevation at the north end of it for a seat or pillow. The bed is 7 feet 3 inches long, and 3 feet 9 inches broad, and the pillow is 10 inches high.

On the eastern face of the easternmost of the detached rocks near this place, may be seen another group of sculptures, representing the same story of Arjuna; but the figures are not so distinct as the former, nor equally numerous, and they appear to have suffered much more from the weather.

On the summit of the most southern eminence of the mountain is a *small ruined temple* of sculptured stone (No. 18) 22 feet in length, 16 feet in breadth, and 16 in height. Its foundation which is of brick, measures 30 feet by 26. There is no regular access to it: the roof has fallen in, and the temple is partially covered by an old banyan tree. There is a fine open view of the surrounding country from the top of its walls.

Directly beneath, and cut into the same rock on which this little fane is built, is an excavated temple (No. 19) 33 feet long, 13 feet high and 17 feet deep. In front are four columns, (one of which is broken), and pilasters at each end. The excavation contains three niches, of which the centre one is the principal; it has a sort of portal before it, and contains a group of figures representing Mahadeva, Parvati, their infant son Subrahmanya, five other figures and a bull, (Nandi). The bull is in front of the principal figures, and on its back rests one of the feet of Mahadeva, and one of those of Parvati. In the floor of this principal niche is a circular trench, 4 feet 6 inches in diameter, and about 3 inches deep, in the centre of which is a circular hole 16 inches in diameter, intended probably for the reception of a lingam. The other niches contain no sculptures. The portal before the centre niche projects from the back wall 8 feet 6 inches, and has a frontage of 11 feet. The front of this is sustained by two sculptured columns, and it has pilasters where it joins the wall.

This excavation however is chiefly remarkable for the sculptures executed on its side walls. These represent, the one, one of Vishnu's states of existence, and the other a celebrated conflict between Durga and Mahishasura.

I shall first speak of that on the south-western side representing Vishnu. Previously however it will be necessary to observe that considerable uncertainty attaches to Nârâyana, or

the state or mode of being in which Vishnu here appears. Hindu Mythology sometimes speaks of it as a mode of existence of Brahma, sometimes of Siva, and sometimes of Vishnu in the act of willing the creation. Under this character Vishnu is represented lying on the lotus, as well as on the thousand-headed serpent Sesha.

The sculpture now spoken of is in bas-relief, and measures 13 feet in length, and 8 in height. The figure of Vishnu is 9 feet 6 inches long, recumbent on the snake Sesha, which is ingeniously coiled for his support in several convolutions, forming together a couch 3 feet high from the base; while five of its heads, (as many as could well be introduced,) form a kind of canopy over the head of the supposed deity.* Above the god are two small figures, male and female; below him in front in a kneeling posture, three; and at his feet erect, two. All these but the last are diminutive; but the two at his feet are seven feet high, and one of them grasps a club. The village brahmans say that two of the figures in front represent cow keepers, who had been ill-used by Mahishasura. These cow keepers (husband and wife) had come to complain to Vishnu. Before they did so however they had inquired of the third figure, said to be a "Shastrum Currah," or sorcerer, as to the precise time when they might have a propitious opportunity. That while they were making the inquiry, one of the attendants of Mahishasura, the figure bearing the club,

* This representation of Vishnu must be very similar to the following. "Hari is one "of the titles of Vishnu, the deity in his preserving quality. Nearly opposite Sultan "Ganj, a considerable town in the province of Bahar, there stands a rock of granite, "forming a small island in the Ganges, known to Europeans by the name of the Rock "Jehangiri, which is highly worthy of the traveller's notice for a vast number of images, "carved in relief upon every part of its surface. Among the rest there is Hari, of a "gigantic size, recumbent on a coiled serpent, whose heads, which are numerous, the "artist has contrived to spread into a canopy over the sleeping god: and from each of "its mouths issues a forked tongue, seeming to threaten instant death to any whom "rashness might prompt to disturb him. The whole lies almost clear of the block on "which it is hewn. It is finely imagined and executed with great skill. The Hindoos "are taught to believe, that at the end of every Calpa (creation), all things are absorbed "into the deity, and that in the interval of another creation, he reposeth himself upon "the Serpent Sesha (duration)."—*Wilkins' Hitopadesa.* B.

came to carry them to his master, to punish them for daring to appeal to Vishnu. The other figure at the feet of Vishnu hereupon interposed, and being one of Vishnu's attendants, drove from his master's presence, the presumptuous servant of the wicked Mahishasura. The expression and postures of the figures do certainly seem to correspond with the story; but the tale itself suits ill the position and circumstances of Vishnu Narayan, which no doubt is represented in this sculpture.

The sculptures on the opposite or north eastern end of the temple, represent the conflict between Durga, (a personification* of active, not passive, virtue), and Mahishasura, (a personification of wickedness.) These figures merit particular description.

The recess in which they are sculptured is 12 feet 9 inches long, and 8 feet high. To the left is seen Durga, mounted on what is intended for a fierce lion. To the right is Mahishasura grasping a short thick club. The figure of Durga is 5 feet high and eight handed: two of her arms have greater relief than the others, a circumstance which imparts to the figure a much greater appearance of truth and nature than would otherwise be the case. The left principal arm is stretched at full length, and the hand grasps a bow: the right arm is drawn back, as if in the act of discharging an arrow: but we see neither the arrow nor the string of the bow. Her six remaining hands hold respectively, on the left, a bell, a chank, and something not easily distinguishable; and on the right, the fatal cord, (*pasha,*) a chakra, (*discus*), and a sword. Mahisha-

* "The *Devatas* are represented as good beings, the *Asuras* as evil ones, in so far "only as there is any countenance to the fiction of *personified virtue* and *vice*. That "fiction is European. All that I have ever read makes the *Asuras* blameable because of "acquired *power;* and power is subdued by superior skill or force. In some instances "the *Asuras* are described as cheated, injured, oppressed, rebelling in consequence, "and then subdued and destroyed. The story of Durga and Mahishasura is the subject of the *Chandi pât'h* of the Scanda purana; and is the great occasion of celebra-"tion at Calcutta in the *Durga puja* feast, which is anything but virtuous." W. T.

sura is represented with a buffalo's head and horns and a human body. He stands in a retiring attitude, resting on his left foot, the right being advanced. His figure measures 7 feet 9 inches, not perpendicularly, but according to the posture in which he stands. Above, below and behind Durga, may be seen her attendant warriors, armed with swords and bucklers : and also two domestics, one with a switch of hair, such as horsekeepers use, the other with a kittisal (or umbrella). Mahishasura has a similar attendant also. Durga's attendants are all dwarfish, corpulent figures ; those of Mahishasura seem of more natural proportions. Durga appears the assailant, Mahishasura on the defensive. Of three figures between the two principal personages, two are in active conflict, and the third is falling headlong. One between the legs of Mahishasura seems to have fallen ; and another of the same party supports himself on his left hand, two fingers of the right being held up to indicate discomfiture and alarm. The whole group is executed with much skill and ability, and evinces the talent of the artist. The figure of Durga in particular is represented with much spirit, and is graceful and easy. The following from a paper by Mr. Wilkins in the 1st Vol. of the Asiatic Researches, serves to illustrate the story. "The evil "spirit Mahishasura, in the disguise of a *buffalo* as the name "imports, had fought with Indra and his celestial bands for "a hundred years, defeated him and usurped his throne : the "story is to be found at length in a little book called Chandi. "The vanquished spirits being banished the heavens, and "doomed to wander the earth, after a while assemble, and re-"solve to lay their grievances before Vishnu and Siva. Con-"ducted by Brahma they repaired into the presence of those "deities, who heard their complaint with compassion, and their "anger was so violent against Mahishasura, that a kind of flame "issued from their mouths, and from the mouths of the rest of "the principal gods, of which was formed a goddess of inex-"pressible beauty with ten arms, and each hand holding a dif-"ferent weapon. This was a transfiguration of Bhavani, the

" consort of Siva, under which she is generally called Durga. " She is sent against the usurper. She mounts her Lion, the " gift of the mountain Himâlya (snowy), and attacks the mon- " ster, who shifts his form repeatedly: till at length the god- " dess planteth her foot upon his head, and cuts it off with a " single stroke of her sword. Immediately the upper part of " a human body issues through the neck of the headless buf- " falo, and aims a stroke, which being warded off by the Lion " with his right paw, Durga puts an end to the combat, by " piercing him through the heart with a spear." The reader will observe that the latter part of this story does not correspond entirely with the sculpture just described, but this must not surprise us, for the Hindu Poets, Sculptors, and Painters, seem to claim the license of representing the same action in a thousand different ways, and under a thousand different versions.

I am tempted here to transcribe the following lines written by Sir William Jones, in reference to this subject.

" * O Durga ! thou hast deigned to shield
" Man's feeble virtue with celestial might,
" Gliding from yon jasper field ;
" And on a Lion borne, hast braved the fight:
" For when the demon Vice thy realms defied,
" And armed with death each golden horn;
" Thy golden lance, O Goddess ! mountain born,
" Touch'd but the pest;—he roared and died."

Marks of the workman's chisel may be seen on a large block of granite, opposite the front of this excavation ; and also at a few yards to the north-east of it, on a rough hewn stone, intended for a bed, with an elevation at one end for a pillow. The bed measures 10 feet 6 inches by 4 feet 9 inches : the pillow is 2 feet broad and 12 inches high. There are two small steps at the foot of the bed.

* It is now almost universally admitted that Sir W. Jones sullied his great talents by writing hymns to Hindu gods. They all borrow scriptural or classical ideas, and paint the personifications of India with colors not their own. The leading idea in these lines is not Hindu, but European. W. T.

On some of the rocks between this place and Krishna's Choultry may be seen the rude commencement of several designs, which have been abandoned. Amongst them, however, is a finished excavation 21 feet long, 17 deep and 9 high. The roof is sustained by 4 strong pillars. There are three niches in this excavation, with the outlines of a figure on each side of the centre niche. There is also a long inscription on the south west end, now almost illegible.

About a mile to the south of the village in a small palmira tope is a cluster of monolithic temples. It consists of five*, each differing from the rest in shape and dimensions, and each fashioned out of a detached solid mass of rock.

The first I shall notice stands a little to the west of the others, (No. 20), and is in shape similar to a horse-shoe. It is a neat piece of sculpture 18 feet in length, 11 feet in width and about 16 feet in height. At the south end, that which is right angled, is a roughly hewn niche, and a portal with two pillars.

The four other temples lie nearly in a straight line; but before describing them I would notice an image of a Lion† and another of an Elephant, both as large as life, which stand between this small temple and the other four. That of the Lion is cracked. It measures in length 7 feet, and round the neck 8 feet: it is sunk in the earth about knee deep; nevertheless it has a noble appearance and its body is well proportioned. The Elephant measures 14 feet in length and 12 feet in height. Its circumference in the largest part of its body is about 20 feet: round its head and throat 14 feet; and round the largest part of the proboscis 7 feet. It appears somewhat unfinished, and is sunk a little in the earth.

* At a second visit to the place I understood that the Sculptor's idea was the construction of five dwellings for the five Pandanas. W. T.

† Lion, the symbol of kingly power: Elephant—that of great prosperity; and in particular the vehicle of Indra. W. T.

On the eastern side of the temples, near the most northern one, is a colossal Brahmany Bull, (Nandi, the vehicle of Siva.) Its head and neck only appear above ground: the length of the former being 4 feet, and the distance between the roots of the horns 3 feet 3 inches.

Of the temples, the most northern (No. 21) is a neat little structure about 16 or 18 feet high and 11 feet square. The top diminishes on all sides by a parabolic curve, till it ends in a ridge 3 or 4 feet long. It has a niche on the western side, in which is a group of figures said to represent Draupadi, the wife of Dherma-raja. My own idea is that it represents one of the consorts of Vishnu or Siva. A female figure is also sculptured on each side of the entrance to the niche.

The temple next to this (No. 22) towards the South is of a pyramidal shape, and covered with ornamental sculpture. It is about 11 feet in front, 16 in depth and 20 in height. It is much cracked, has a niche on the same face as the last, but there are no figures within.

The largest temple in the group (No. 23) stands next in order;* it was abandoned before the design was completed and remains in an unfinished state. Across the middle there is a large rent, in some parts 3 or 4 inches wide; this has divided the body of the temple, and caused the separation of a large piece of the solid stone on the western side about the centre of the verandah. Another large piece has fallen from the south western corner. Unfinished excavated verandahs exist round the lower part: and above them, on the outside, the body of the temple diminishes in width and length, so as to leave sufficient space to walk round it. The verandah on

* Mr. Braddock has by an oversight omitted to give the measurements of this temple, I therefore supply them from Mr. Goldingham's account; although I must here observe that in other measurements as given by them respectively I find some trifling discrepancy. Mr. Goldingham's says that the temple measures 49 feet by 25 feet, and 35 feet in height. M.

the south eastern or Sea face of the temple is almost choked up with sand; but that on the opposite face retains its original height, and in it a large block of the solid stone projects from the back wall. The roof or top of this temple is elliptical, and the general design is beautiful and elegant.

The last and most southern temple of the group (No. 24) is of a pyramidal shape: its base measures 28 feet by 27 and it is 34 feet in height. It is neatly finished and much ornamented. In the two upper stories on the north western face are niches; and on the ground story of the same face is a portal with four pillars, projecting from the body of the temple 4 feet. Besides the ornaments which it possesses in common with the rest, this temple has a profusion of figures of various sizes, representing Vishnu and Siva, in some of the many different characters which they sustain in the mythology of the natives. These figures are carved in recesses corresponding with their size; and over the majority of them are inscriptions, of which and of the figures, lithographed sketches may be seen in the transactions of the Royal Asiatic Society before alluded to.

About 3 miles to the north of the village, on the sea shore, are several granite rocks, one of which inclining to the eastward projects about 40 feet above the surface like a huge pillar. On another are sculptured various figures representing heads of fierce horned animals, of the precise appearance of which it would be difficult to give a written description. Returning towards the village, about half a mile north of the village choultry, we meet with a small temple built of hewn stone, and resembling in its ornaments those already described. The entrance is nearly filled with sand, and the walls are much dilapidated by trees which grow out of them. There is nothing, I believe, inside.

The last of these ancient remains to be described, are two

temples (No. 26) built eastward from the village close to the sea shore. They are indeed so near the sea that the surf dashes against the foundations of them. They occupy a space of about 1600 square feet and are becoming ruinous. They adjoin each other, being in some sense but one piece of building; but the existence of their two spires impresses one with an idea of their being two separate temples. The more lofty structure I imagine to be about 60 feet high. This is the most eastern of the two, and has, overlooking the sea, a doorway 7 feet 6 inches high and 6 feet wide. Within this temple will be found a large broken black granite Lingam, and a group of sculptures representing Mahadeva, Parvati and their son Kartikeya or Subrahmanya. The smaller temple contains a similar group of figures. The body of the large temple is inclosed with a massive stone wall, which as well as the temple itself bears the appearance of having been decorated with much ornamented sculpture. Small pieces of chunam still adhering to the ornaments give rise to the conjecture that the temples were either originally coated with it, or have been so covered in subsequent repairs. There can, I think, be no doubt that they were once elegant specimens of architecture; though they are now too much decayed to retain many traces of their original beauty. The mineralogist might possibly form some idea of their age from an inspection of the several species of granite of which the walls are composed. Some kinds of this rock, it is known, are much more liable to decomposition than others, (gneiss especially); and the fact is here evident; some of the stones are very much decayed, while others appear as sound as on the day they were hewn. In a kind of passage of the larger temple is a large mutilated statue of Vishnu, now lying supine.

These temples were formerly surrounded by an outer stone wall, part of which only is now standing. Two pillars also remain shewing the position of the western gateway

Huge heaps of granite stones, on several of which are sculptured figures, lie in front and on each side of the eastern temple, and have tended greatly to protect it from the hostility of the sea, which has evidently encroached considerably. Many of these stones are of large dimensions, measuring from 6 to 10 feet long, 3 feet wide and 1 foot thick; and on some of them are appearances of sculptured architectural ornaments, though the injuries of the weather, the action of the water, and the lapse of time have combined to deface them. About 65 feet in front of the eastern temple, and now standing in the sea, is a square stone pillar, (a common appendage I believe to all the country pagodas), which measures 11 feet in height and is 22 inches square.

At a few yards north of the temples, on a detached rock (No. 27) close by the sea, may be observed a gigantic figure of Mahishasura represented with the head of a buffalo. On a similar detached rock to the south are figures of a horse and an elephant's head (No. 28). These sculptures are considerably worn by the continual washing and action of the surf.

There is no doubt in my mind that the sea has made considerable encroachments since the erection of these temples. I cannot conceive, were it not so, why they should have been built on the shore, so close to the sea that the surf in the calmest weather dashes against the doorway; while some of the well known appendages of such pagodas are actually at some distance in the waters. The large quantities of stones lying about the temple, and others which partially appear buried in the sea, seem even to indicate that other buildings also have existed to the eastward of these, which are now destroyed and overwhelmed by the ocean.

I have now given an account of all the curious sculptures and buildings which came under my observation at three se-

veral visits to the Seven Pagodas, and I believe I have omitted nothing which merits notice. I am fully aware that the account is imperfect: indeed I hold it impossible to convey a correct idea of the remains of former ages by a written description, even if the account be perfectly accurate. Who could by such means form a just conception of the actual appearance of the ruins of ancient Persepolis, of Tadmor in the desert, of Pompeii, of the various temples in Italy, and the remains of classic elegance in Greece and the Isles of the Ægean Sea? We may indeed read of pillars, colonades, porticoes, rooms, baths, apartments, and a long list of architectural definitions; but after all, the mind possesses but an imperfect image of the originals. Pictures and drawings help the description, but personal inspection is best of all. I therefore advise you, "gentle reader," if you have it in your power, to visit these singular vestiges of antiquity at Mamallaipur. I can promise you ample recompense for your trouble. If you have antiquarian curiosity, you may here satisfy it. If you have any disposition to moralise,—as a christian should do,—on the end of human greatness, you will see that though here it has been attempted to "grave it in the rock for ever," it still passes away; and you will turn your thoughts from these, amongst the most durable perhaps of mortal productions, to that heavenly city which is indeed eternal.

Remarks by the Rev. W. Taylor.

The author of the foregoing paper having done me the honor of transmitting it to me for perusal and remark; and the few cursory observations made having called forth a fuller explanation of his wishes,—although I do not think myself fully able to meet them, –I offer the few following observations on the locality which is the subject of his interesting illustrations.

I. The Name. This the people of the neighbourhood colloquially term *Mávalivaram.* It is also known to natives as *Mabalipuram,* whence I presume, it became expanded (by Mr. Goldingham if I remember aright) into *Mahabalipuram.* More recently I observe Dr. Babington has made it *Mahámalaipur,* "the town of the great" (or as Dr. Babington understands it, sacred) "hill." If the said reading be actually borne out by the old Tamil inscription near one of the caves, I must submit; but without copy, or fac-simile, the accuracy of the reading may be open to doubt. There is considerable reason (*a*) to believe that the true reading is *Mámallapuram;* and the true reading is of consequence.

Malla is a northern patronymic, or rather titular name of a race, like Cæsar, or the Medicis, or the Bourbons. In local papers of the Mackenzie collections, obscure but numerous indications are given of a race of chieftains bearing that surname; of whom *Deva-Malla-raya* is most frequently mentioned. This chieftain was a (Peninsular) highlander in origin; not, properly speaking, Hindu, but of an aboriginal

(*a*) According to legendary tradition one named *Mallésudu* ruled in early times. He seems not to have been a *Hindu,* as he mocked a Brahman, and was metamorphosed into an alligator. An appearance of Vishnu is said to have occurred. Before that appearance the place was called *Mallapuri* and *Mallapuri-cshetram,* from the above *Mallésudu.* Mackenzie M. S. S. Book No. 33 C. M. 787. Sect. 9. This paper is in the Telugu language.

race. Now *Deva-malla-raya* indicates dignity and lineage: of which title *Mà-malla-ràja,* would be almost an equivalent; indicating indeed a lower rank, but quite suited as a distinctive epithet of a minor offset from the parent stem. Again in the Mackenzie local papers, there is abundant evidence of a gradual progress of colonization by Telugu people, from proximity to the Godavery southwards, at least as far as Nellore; and various instances (*b*) occur in which those who first cleared forest land and began to build a town, gave their own names to the town so formed. I would not assert it as a fact, but I regard it as a probable inference, that the locality, in immediate question, derived its name from its founder, an offset, or junior branch, of the *Malla* chieftains in the north. I would not leave the name without noticing that in a modern Tamil poem written in the south, mention is made of the king of *Mavalivanam*: but whether this place be designated or not, is doubtful; and I do not think such an authority could be trusted.—Quitting the name of the place we may further advert to

II. The antiquity, or probable antiquity, of the sculptures. That the antiquity is not very great may be concluded by inferential deductions; as 1.) The mythology of the figures is Hindu; the general story, part of that contained in the *Mahabharata*; the language of the inscriptions, at least in some places, Sanscrit: therefore Brahmans were some way concerned. But there is much concurring evidence to shew

(*b*) Subsequent to Sal. Sac. 424, or A. D. 502, a person named *Mahimalu,* or *Mavàlamu,* left his native place owing to oppression; emigrated southerly, and built a village of four or five mud huts. It was called after the founder *Mavamalur.* It increased; and by a separation of brothers at a later date *Nandi-varam* was founded, ultimately a town of note. Ibid. Book 49 C. M. 739.

This is merely an illustration. From a yet unpublished abstract of another paper, I find that two persons named *Malla-raya* and *Annama-deva-raya,* emigrated from *Vijayanagaram* to the district of Arcot, or neighbourhood of Conjeveram, and obtained some immunities from the wife, or queen, of *Deva-rayer.* These people were of the tribe of athletæ, proceeding from the original stock of mountaineers. I cannot identify these persons with *Mámalla-puri.* At a period later than *Crishna-rayer,* there were four avenues leading from Conjeveram to distinguished towns, one of which was *Mahabalipuram,* then reputed to be of *Vaishnava* credence.

that the first immigration of Brahmans to the Peninsula was not of remote antiquity. Besides which consideration, 2.) It is beyond doubt that before the time of *Kulóttunga Cholan*, and his illegitimate son *Adondai*, the whole district bounded on the north by the *Pennãr*, on the south by the *Pálàr*, on the east by the sea, and on the west by the ghâts, was dwelt in by half civilized people termed *Curumbar*, who had embraced the *Jaina* religion, brought to them from the north. *Adondai* chiefly distinguished *Cánchi-puram (Conjeveram)* and *Tripeti*, as his places of residence, or capitals. The era of *Adondai* is not higher up than the seventh century of our reckoning. He is said to have brought the Brahmans from *Sri Sailam* in *Telingana*, and certainly attracted a large colony of *Sudra Velazhas*, or agriculturists, from *Tuluva* or northern *Canara*. Soon after him the kingdom, which he acquired by the sword, was broken up into petty principalities, and lapsed into a state of partial anarchy. As we can distinctly trace the founding of Vellore to a period later than *Adondai*, and to colonization led on by a northern chief, so about the same period, I am inclined to think, the neighbourhood of *Mavalivaram* was colonized from the north, by one of the *Malla* family with his clan. Besides 3.) The Inscriptions are in too perfect a state of preservation to be of remote date. As far as my knowledge extends, inscriptions, with a defined year, have not been met with, in a legible state, higher up than the tenth century. I am aware of one or two *apparent* instances of much higher date, but with the absence of any precise year : hence inconclusive. Fragments of inscriptions in the *Pandiya* kingdom, (the oldest one in the south,) have I believe generally been so worn as to be incapable of connected transcription. But the appearance of the chiselling at *Mavalivaram*, (from the distant recollection of about fifteen years), is such that it would tax my credulity greatly to assign them a more distant date than from three to five hundred years.

If then we inquire into

III. The origin, or probable origin, of the place with its sculptures, my own judgment would lead me to fix the possible origin of the settlement at *Mavalivaram* to a colonist family of the *Malla* tribe; subsequent to the rule of *Adondai*, and previous to the ascendancy of the *Vijayanagaram* ascendancy in the present Carnatic; that is, (loosely stated), between the twelfth and sixteenth centuries of our reckoning. In this opinion I am guided by analogy. The *Bhonju* family, in that manner, spread itself in a district; afterwards subject to the *Gajapati* princes of Orissa. The *Malla* family, from wild mountaineers, became powerful chieftains in *Telingana*. Many families, in that way, made subordinate settlements in different village districts of the same country; and, about the period above indicated, some heads of families emigrated from the *Carnataca-désam* proper, and became local chieftains; while many others at a later period, and from different causes, followed a like course. But if I am right in this inference by analogy, it does not follow that a settlement, made in a before pastoral, or waste country, would at once become a place of power or consequence. The same mode of argument would suggest the need of some centuries, in order to produce such a result; and we know that many mutations occur in such kind of states, when near powerful neighbours. Accordingly though the name of the founder may have continued, yet, the conquest of the South, began by *Crishna-rayer* of *Vijayanagaram*, and completed by *Achyuta-rayer*, probably (*c*) overwhelmed any such principality. Such was the case with the

(*c*) In my abstract of the Tamil manuscript entitled *Carnataca-rajakal*, I do not find definite mention of such a supercession: but I think it probable from the general conquest of the neighbourhood; and suppose the district became subject to the local metropolis of Gingee. In the paper referred to (note *a*) it is stated that *Sinhama-naydua* of the *Vellugativaru* race ruled at *Mavalivaram*, and employed many artificers, who resorted thither in a time of famine, in making excavations and sculptures on the hill. Following out this indication, I observe that *Yáchama-nayadu* and *Sinhama-nayadu* of that race fought a great battle and gained a victory over opposing chiefs in Sal, Sac. 1523 (A. D. 1601). By that time the power of the *Vijayanagaram* sovereigns was broken: and it said the Mahomedans were concerned in the affair, in connexion with Gingee and Vellore. The scene of combat was Ootramaloor. This period would mark another

before local powers at Gingee, and at Tanjore. In those places military commanders became viceroys, and their descendants, kings. And I think it probable that a chief of this latter origin from Carnataca proper, (borrowing the idea from Ellore), had the excavations and sculptures made, and the inscriptions recorded; especially those in the *Hala Canada* character and Sanscrit language: of parts of one (*d*) of which Dr. Babington has given a copy and translation. If this inference approximate to truth, the works alluded to must have been accomplished in the sixteenth or seventeenth century.

These cursory remarks may be concluded with

IV. Miscellaneous observations; chiefly suggested by Dr. Babington's paper in the 2d vol: of Transactions of the Royal Asiatic Society; the latest essay on the subject of which I have any knowledge. The value of that paper seems principally to be in the plates, from drawings and inscriptions, and especially in the deciphering and translation of the latter. They prove, (as such inscriptions usually prove) very unsatisfying: for this reason perhaps, that the objects in the mind of the recorder, and in that of the archæologist, are entirely different. Of the six inscriptions at this place, to be found in a volume of the Mackenzie M. S. S., five are of unimportant donations, (including, if I mistake not, the Tamil one men-

change of power superceding the supposed, or rather inferred authority of the viceroys from *Vijayanagaram*. And if *Sinhama-nayadu* subsequently employed stone-cutters in the sculptures, then we have the period fixed to the seventeenth century. It is not however absolutely necessary to suppose that all the works were begun by the same chief, or finishéd (in so far as finished) by the same hands.

(*d*) In that incomplete inscription on the "small monolithic pagoda," neither date nor proper name of the king or chief appears. *Kàma ràja* is a mere epithet, and the other name appears to me strange and quite unusual if applied to the ruler. I throw out the conjecture that *Jayarána* is a Sanscrit word modified into Tamil. *Stambha* is pure Sanscrit for a post, column, or pillar. *Jaya-stambha* is of frequent usage for a triumphal column, or pillar of victory. I would render *Jayarána Stambha* by "the pillar of the victorious one," without however insisting on being right, because the construction is a little forced; and merely add that possibly *Sinhama-nayadu* may have had the pillar and the inscription cut to commemorate the victory at Octramaloor: still however prefering the opinion before given.

tioned by Dr. Babington ;) and one which is of larger import, has only the name of *Deva-rayer* (*e*) as a clue to the date. Now this might be *Achyuta-deva-rayer*, who was very liberal to Conjeveram: or some one later, even a local chieftain; but not, I conceive, any one of the *Vijayanagaram* dynasty higher up than *Achyuta-rayer*.

The paper by Dr. Babington appears to me to contain some minor inaccuracies, (*f*) on which it might be trifling, or invidious, to dwell; but the supposition that the place was merely an *Agrahåram*, and that Brahmans procured the sculptures to be made at their own cost,—with the more astounding denial, that the Sea has encroached on the coast of Coromandel, are not of trifling import. As to the first, it contradicts all known experience, in so far only as relates to Brahmans laying out funds at their own entire control, on such sort of works. The second is a point of greater magnitude. I regard the

(*e*) Connecting this note with note (*b*), I think the same *Deva-rayer* may be meant, but am not certain. There was only one (I believe) of the older *Vijayanagaram* dynasty that bore that name without any prefix. He ruled about Sal: Sac: 1334, or A. D. 1412. In these dates I follow one M. S. authority, without deciding that it is the best. A list with different dates may be seen in Mr. Campbell's Telugu grammar; in which also instead of simply *Deva-raya* we read *Ganda-Deva-raya*. But after *Crishna-deva-rayer* all of the second dynasty bore it, with a distinctive prefix. Probability inclines to the latter period, between S. S. 1451 and 1508, or A.D. 1529 and 1586. Nevertheless it must not be forgotten that about A. D. 1400 the power of the *rayer* has been traced at Trichinopoly and Madura. in the person of a general named *Campanra-udiyår*, who annihilated the remains of the first Mahomedan incursion to the Southward. The state of the modern Carnatic was however too unsettled to permit the supposition of the first *Deva-rayer* making grants or donations within its boundaries.

(*f*) It is not my wish to be very particular: however the statement by Dr. Babington that "the copper and stone inscriptions found——in many parts of the country, are all in the Sanscrit language," does not agree with the mention made by himself of a Tamil inscription in or near the *Varåha-mandapa*; nor with the recent discovery of some, as is stated, *Påli* inscriptions in the north. But keeping within the limits of the peninsula, the interests of truth require me to state with entire respect, while touching on the subject, that the Mackenzie papers contain many hundred *copies* of inscriptions in Canarese, Telugu, Malayalam and Tamil; many of which I have examined, and can attest that, though copies, they are not translations. It is not an unfrequent case to find inscriptions with florid Sanscrit *Slocas* at the beginning or end, with the real matter of fact in plainer prose of the vernacular language. The undeciphered part of the inscription given by Dr. Babington requires further attention, for its present obscurity may involve some such humbler termination.

few data on which the denial of any encroachment of the Sea is founded, as quite inconclusive; though this does not seem to be the place for their discussion, nor yet for the statement of contrary facts and arguments. It is a point on which I apprehend Dr. Babington to be at issue with truth: but beyond this mere expression of an opinion, it does not seem important further to pursue the subject, in these very cursory annotations.

Having had an opportunity of reading over these remarks after an interval of more than a year and a half, and having seen, in the interim, copies of two inscriptions from the neighbourhood of Mavalivaram, in the Tamil language and old Tamil character, I find that the spelling therein is *Màmallaipur,* with two *l's.* The language is not the pure old Tamil; but the orthography is so generally correct, that the two *l's* cannot be an orthographical error; and if not, then the word does not mean *hill.* The language is comparatively modern Tamil; being much mixed with Sanscrit derivatives, which is not the case with very old Tamil. The name of *Deva-raya* appears; and an opinion seems to have been formed that it meant a *Chola* king. I cannot positively deny such an inference; nor yet another inference that similarity of character in neighbouring inscriptions, must argue identity of origin. The subject is confessedly open to variation of opinion; and inquiry would seem to be requisite before a decision can be positively made.

Supplement by WALTER ELLIOT ESQ.

Besides the objects of interest usually visited at the Seven Pagodas, there is a spot about two miles north of Mahamalleipur, the sculptures and inscriptions at which will be found not unworthy of attention. Proceeding along the sea shore towards Madras, at the distance above mentioned, a quadrangular space inclosed by mounds of considerable extent, No. 31 in the map, called by the fishermen *Devanári*, will be observed. From the appearance of these mounds, added to the fact that numerous copper coins, glass-beads, and bits of Iron, copper, &c. are picked up after heavy rain or high winds on their surface, it might be supposed that they indicated the site of some ancient edifice or fortification: but an excavation made in 1840, completely thro' one side, failed to elicit any discovery in support of such an opinion. The section was carried, through pure sand, to a depth of 20 feet, and the only extraneous substances met with were some pieces of charcoal, at different depths.

About quarter of a mile farther, near a collection of fishermens' huts, called *Sálván-cuppam*, are some remarkable rocks, standing a considerable height above the beach, and known by the name of *Idian Padal*. One of these exhibits a niche or pannel, surmounted by an arched border composed of the heads of the Sinha, or fabulous lion of Hindu mythology, carved in relief; while another has been rough-hewn into the outline of the same animal. Beyond this is a Stone *Mantapam*, or temple, almost entirely buried in the sand. Within is a Lingam. This is the site of the inscriptions referred to by Dr. Babington, in the 2d Vol. of the Transactions of the Royal Asiatic Society, as having been sent to him by Col. DeHavilland. Of these Nos. 1 and 2 of plate 15, pronounced by Dr. Babington to be identical, are engraved on the end walls of the Mantapam on either hand of the entrance. On the frieze above the entrance likewise, occurs the word, in each of the two characters deciphered by Dr. Babington,

"ATIRANACHANDAPALLAVA."

At a little distance to the North west of this temple, on a flat stone, (No. 32 in the map), level with the surface, occurs the following in old Tamil characters :

ஸ்வஸ்தி ஸ்ரீ இசசகதலதமானர்க்கு மதிதவிட்டாகு மாப்பட்டியில்திருவமிதிக்கு இருமாநிலமும்திருவிளக்குக்குகழஞ்சுபொன்னும் குடுத்தது.

"Salutation! two Mas[1] of land in Mapatti[2] for a sufficient daily meat "offering, and a Kalanji[3] of gold for maintaining a lamp, are granted to "IJJAGATALA[4] TAMANAR."

About 100 yards north of the Mantapam is a mass of natural rock, (No. 33 in the map), one end of which is covered with a long inscription in ancient Tamil. The character, as well as that on the flat stone just mentioned, is quite different from those above alluded to; but corresponds with the one first described in Dr. Babington's paper, as "seen on a face of rock by the side of the inner entrance to the Varahaswami pagoda"[5] on the south side of the hill at Mahamalleipur, and of which an alphabet is given in plate 13. The greater portion is buried in the sand; but in 1840 this was cleared away, and a transcript of the whole carefully made, of which the following is a translation. The original in modern characters is given at the end of this article; (marked A.)

"Salutation!

"In the presence of TIRUVACKEJAVI[6]

"In the 37th year (Andû) of the reign of TRIBHUVANA VIRA DEVA, "Sovereign of the three worlds,[7] who having taken (or holding) Ma-

1 A *ma* is a 20th part.

2 *Mapatti* is probably the name of a field.

3 *Kalanji*, an ancient weight.

4 *Ijjagatala Tamanar* "the Lord of this world." *Tamanar* should probably be *Tambanar;* the title refers to *Atirana Chandeswara.*

5 Page 263.

6 This is read in two senses. Some explain *Tiruvackejavi* as *Saraswati*, the goddess of learning; while others read the invocation thus, May the *Agamas* and *Vedas* be pre-eminent.

7 *Tribhuvana Chackra vartigal,* a repetition of the Kings titular name.

" dura, Ijam (or Ceylon), and Karuvur, and the crowned head of Pandi-
" yan, made the Virabhishekam and Vijayab'hishekam, (i. e. the lustrations of heroism and victory; ———— and, by the grace of ADISANDESWARA, in the temple of SUBRAHMANYA DEVAR, in the Dévadánam—Brahmadéyam—village[1] of Tiruvijichilúr, in the A'mur cóttam of the victorious Chóla Mandalam :

We Andàr Tillei Nayakar, the overseer[2] of (the temple of) SRI MAHESWARA; Chembiyan Múvénda Vélar, the steward[3] of this temple; " Pan Mahésvara Battan, otherwise called Adkonda Villi Selavappiran, a " Siva Bramin, having proprietory right[4] in this temple and officiating in it;[5] " Narpattennayira Battan, also named Aludeiyán Gnanam Pettan, a Siva " Bramin, having proprietory right in this temple and officiating in it; and " Tiruvijichiludayan, the accountant of this temple; all of us have sold the " lands, (herein undermentioned), and executed a deed engraved on stone, " in favour of Andár Karuppúrudeiyan Nambi Arputa Kúttar[6], performing " his adorations in this temple. The lands, which we sold to this person " because the revenue[7] in the treasury[8] of the god has proved deficient, on " account of the decrease in the collections (or assessment[9]) of Tiruvijichilur, the property of the sacred name[10] of Pilleiyar, are as follows :

" In Peri yéri Kajani

	Kuji
" Adeikádu Tenkuru........	184
" Attipattam Kúru..........	250

" In Ural éri Kajani

" Adi Mallei Nátan
" Rettei Cheruvu

" " " In Tengam Kajavu or Arputa Kuttan

" Tàdcheruvu
" Uvarkundil
" Pavasanniyam

1 Granted for the support of the gods and of Bramins.
2 *Kangani*, literally a watchman or Superintendent.
3 *Srikariyam* or chief servant.
4 *Kani.*
5 *Devarkanami-kshetra.*
6 *Kuttan* is still a title of the nobler class of Todavers on the Neilgherry Hills.
7 இறை in the Sadaragradi, the meaning of this word is given as *Kudivaram* the ryot's share.
8 பண்டாரம் a sacred Treasury. Hence in the Travancore state, the term is employed for that Sircar; to intimate that the Government is under the especial protection of the deity.
9 இறைஇறுப்பு
10 திருநாமகாணி a respectful mode of describing the property of the god.

" { In Nirodu Kajavu
" { Ch***n Kajavu

"amounting to Kujis............ 2,280

In Talei Seri Palam

"Udaya Nambi

"Kottamanu

"Kuditangi

"Sivadasa

"Pallavritti

"Amounting to Kujis............ 1440

" Total Kujis, 4,150

"Being Nilams 2, Ma $1\frac{1}{2}$

"This extent 2 Nilams $1\frac{1}{2}$ Mas, and also the building site and garden "containing 400 Kujis situated to the East of Arputa Kuttan and Uva "Kundil, we have sold to this person (aforesaid), to be his property, and "have received its value, 300 new cash, into the Pilleiyar's treasury, and "engraved the deed (of sale) on a stone.

"Having consented (to his) irrigating these lands either naturally or "artificially, and also conveying sufficiency of water to the trees, we "engraved this on stone in favor of Karuppúr Udayàn Nambi Arputa "Kùttar.

" We, the Proprietors of this Temple, have given

"Thus (Signed) Tillei Nayaka

"Thus „ Pan maheswara Battan, or Adkonda Villi Selavappiran, a Siva Bramin, having hereditary right in this temple and officiating in it.

"Thus „ Aludeiyan gnanam Pettan Narpattennayira Battan, a Siva Bramin, having hereditary right in this temple and officiating in it

"Thus „ Siva Kariyam Chembiyan Muvendu Velan.

"Thus „ Teruvijichiludayan, accountant of this temple.

"I, Narpattennayira Pillay, of Tiruporiyur, know this.

"I, Murichettu Nárâyana B'hattan, of Chiratavur, know this.

"I, Velan, of Chiratavur, Amúr Nattu, know this.

"I, Periandan, for Muran Kali Neri and Nekkumaravu, of Mambakam, know this.

"I, Kurovi Drona Battan, of Peiyanur know this.

"I, Mayinda Kuri Battan, know this.

"I, Vishamu Kijavan, know this.
"I, Amur Nattu Velan, of Mamalleipuram, know this.
"I, Kuvaleikanni Maya Kijan Vichan, Warden of the Pilleiyar temple, "know this.

The inscription appears to be an ancient deed of sale, and its importance in this place depends on the means it affords of obtaining some clue to the date at which it was made, and which Dr. Babington hopes may yet be obtained from the similar Varáha Swami *Sasanum.* That however given in the commencement is only the *andu,* or year of the reign, of one of the *Chola* Princes, the exact chronology of which dynasty is yet to be ascertained. There is however another inscription, of an ascertained date, at the neighbouring hamlet of Pavajackarans' Choultry, engraven on a stone under a large Pipal tree, near the steps on the south side of the Tank, the characters of which are precisely the same as those of the Salvam Cuppara rock and the temple of Varáha Swami; who appears moreover to have been the common divinity of all three villages. It is as follows: (vide the original, in modern characters, marked B.

"Prosperity! at the holy time of the Makara Sankrama, on Wednesday, "the 5th in the constellation of Uttiratadi, in the Brama yoga, in the Bâla-"vàkarana, in the light fortnight of the month of Makara, in the cycle "year Manmatha, and Saka year 1157, when Sriman Maha Rajadhi Raja "Parameswara Sri Vira Pratàpa Vikrama Déva Maharayer ruled over "the earth, (on that occasion,) Tiruvengala Nayakar gave the piece of "land surrounding the Mantapam, dedicated by Timmapa, for the halting "place at the festivals of Pádiveta of Perumal Adivaraha gnana Peran, the "deity of [the three villages] of Punjeri, Tirupackadal, and Mahamallei-"puram, extending over 1000 Velis of land, in the Vadakanadu,* of the "Kottam of Amur, in the Victorious Chola mandalam,—This piece of land, "and the salt pan in Kuttapakam, called Viraya Pambam, have been given "so long as the moon endures for the Pàdiveta Tirunal of this deity. Ad-"ditions may be made to this donation. May this charity be continued "so long as the moon endures! Let the hidden treasurers, waters, mine-"rals, and every thing which the land or the salt pan contain within their

* Northern District.

"limits, become the property of this deity. Any person that injures this "charity, will incur the guilt of having killed a cow on the banks of the "Ganges. The Kaniyalars, [or Proprietors of the land], Singalangamar, "Nyna Mudaliar, and Virava Nynar, have affixed their signatures to "this gift. Thus also Pyanurudayan Uttam Pirayan Annappen, the "village Kurnum, has signed. May prosperity continue!"

Who *Vikrama Dev* was, does not appear; but he may have been a local officer, perhaps a feudatory or governor under the *Cholas;* which dynasty shortly afterwards gave way to that of the *Rayeels of Bijanagar.* The Salivahana year 1157, corresponding with A. D. 1235, however gives a tolerable approximation to the Æra of the Tamil inscriptions; which, as connected with the worship of Vishnu under the form of the Boar incarnation, and the representation of the same subject in one of the Caves, [plate 5 of Dr. Babington], afford also some clue to the period at which the sculptures were executed. A further guide to the æras of both the Tamil and Nagari inscriptions may be obtained by combining and comparing some scattered notices obtained in other inscriptions.

An inscription at Dharavaram in Rajahmundry shews that a *Vira Chola Deva* was reigning in† S. S. 1001 or A. D. 1079. His name too occurs in the best authenticated lists of the *Chola* dynasty. I have no doubt that this is the prince above alluded to. The grant would therefore be in 1038, or about a century anterior to that of *Pavajackarans Chuttram.*

That these Tamil inscriptions were posterior to the formation of the *Adichandêswara Mantapam,* the *Rathas* and the temple cut out of a single mass of rock, (from which Dr. Babington copied the *Kama Raja* inscription,) is established by the invocation of ADISANDESWARA,‡ the tutelary deity of

† He also bore the titles of *Kulottunga* which seems to have been adopted by several *Chola* princes; of the 7th *Vishnu Verddhana;* and of *Tribhuvana Malla* in other inscriptions from the same district. See MS. Catalogue of the McKenzie inscriptions.

‡ *Adisandéswara* must be identical with "*Atiranachandéswara*" the Lingam set up by *Atiranachanda* See Dr. Babington, Trans. Roy. As. Soc. V. II. p. 267.

In Tamil the த pronounced "*t*" at beginning of a word, and *d* in the middle, is identical with the Grantham and Nagari *t;* and ச is the only Tamil equivalent for the Nagari *Ch.*

Tiruvijichilur, in the inscription on the rock.

In a copy of a Grant at Pittapoor, in my possession, *Vijayaditya*, the founder of the *Chalukya* dynasty of *Kalinga*, about the middle of the 6th Century,* is described as "destroying the southern King *Trilochana Pallava*, and, thro' the "decree of Fate, losing his life in that country." From the title *Pallava* it may be inferred that this chief was of the same race, and probably the same family as *Kama Raja*, surnamed *Jaya Rana Sthamba*, [the pillar of successful war], and *Ati Rana Chanda Pallava.*

Another inscription, engraved on a set of copper plates, (in the possession of Mahendra Shanta, a Jain Guru at Hyderabad,) and of an æra 60 or 70 years later contains the following passage.

"Having conquered in battle, the hostile kings in the different quarters "&c. he acquired the names of *Parameswara* and *Vicramaditya*.† Moreover *Pallava Mardu* was overcome by this Lord *Sri Vallabha*, who annihilated the renown of *Narasimha*, surpassed the valor of *Mahendra*, and "excelled *Iswara* in affability. He has justly assumed the title of *Sri Vallabha*, being in the unprecedented possession of *Kànchi*, as it were the "loosened zone (kanchi) of the Nymph of the south. He is also rightly entitled to the name of *Rajamalla*, having secured his acquisition by his "large and strong arms, and conquered the chief *(Palaka)* of the *Mahamalla* race."

From these facts it may be inferred, that the rulers of Malleipuram were in a state of independence in the 6th and beginning of the 7th Centuries. We know from other sources that the *Chola* Kings reduced *Tondamandalum* about the 7th Century.‡ At that time it was parcelled out among

* About S. S. 475 or A. D. 553.

† This refers to one of the early *Chalukya* Kings of *Callian*, who is described in the beginning of the Copper plates as son of *Satya Sriya*, grandson of *Kirti Varma*, and great grandson of *Pulikesi*. His æra was about S. Saca 518 corresponding with A. D. 620. The *Kalinga* and *Kallian* dynasties were collateral branches of the same race.

‡ Ellis in Trans. Mad. Lit. Soc. p. 19.

a number of petty chiefs of the *Curumbar* race,* who with their followers were almost entirely extirpated by the *Cholas*. The family that posessed *Mamalleipur* was probably one of the principal of these. The excavations therefore could not well have been made later than the 6th Century. Neither could they have been much earlier, for the forms of the letters both Grantham and Nagari do not justify the supposition of a higher antiquity.†

Under the *Chola* dynasty we find Tamil invariably employed as the character of inscriptions.

Whether all the temples were excavated by the *Pallavas* seems questionable. They were evidently worshippers of *Siva*. Many of the subjects, particularly those in plates 2, 5, 7, 10 of Dr. Babington's paper, belong to the *Vaishnava* creed, which is more particularly referred to in the inscription at Pavajackaran's Choultry, and is known to have been of later origin. It is not improbable, therefore, that these may have been the work of more recent devotees, emulous of the fame of *Kama Raja* and *Ati Rana Chanda Pallava*.

In the possession of the Pujari of the modern temple is a deed in Telugu, engraved on copper plates connected by a ring, with the figure of a boar and a sword on the seal, purporting to be a grant of the village of Nelatur to *Kesavarya Sri Rangachariya* by *Vencatapati Sri Deva Raya* in the Saca year 1532, *Plava Samvatsara*.

* 2d Report on the McKenzie MSS. by the Rev. W. Taylor p. 86. Journal VII. p. 311.

† See Prinsep's comparative table of Hindu alphabets.

A.

ஸ்வஸ்திஸ்ரீ-திருவாய்க்கேழ்வி முன்பாக ஸ்ரீத்ரிபுவந
சக்ரவர்த்திகள் மதுரையுமீழமும் கருவூரும் பாண்டி
யன் முடித்தலையும் கொண்டு வீரஅபிஷேகமும் விஜய
அபிஷேகமும்பண்ணியருளிய ஸ்ரீத்ரிபுவநவீர தேவற்
குயாண்டு-௩௰௭-வது-ஜயங்கொண்ட சோழமண்டலத்
தாமூர்க்கோட்டத்து தேவதானம் ப்ரஹ்மதேயம திரு
விழிச்சிலூருடையமஹாப்ரஹ்மண்யதேவர்கோயில் ஆதி
சண்டேஸ்வரதேவரருளால்இக்கோயில் ஸ்ரீமாஹேஸ்வர
கங்காணிஆண்டார்தில்லைநாயகரும்ஸ்ரீகார்ரியஞ் செம்பிய
மூவேந்தவேளாருமிக்கோயில் காணியுடையசிவப்ராஹ்
மணன் தேவர்கன் மிஷேத்திரத்துஆட்கொண்டவில்லி
செல்வப்பிரானானபன்மாஹேஸ்வர பட்டனுமிக்கோயில்
காணியுடைய சிவப்ராஹ்மணன் தேவர்கன்மிஷேத்
திரத்து ஆளுடையான் ஞாநம்பெற்றானான நாற்பத்தெ
ண்ணாயிரபட்டனும் - கோயில் கணக்கு திருவிழிச்சிலு
டையானும் - இவ்வனைவோரு மிக்கோயிலில் கும்பிட்டி
ருக்கும் ஆண்டார் கருப்பூருடையானம்பி அற்புத கூத்
தற்கு நிலவிலை ப்ரமாணம் பண்ணி கல்வெட்டி குடுத்த
பரிசாவது பிள்ளையார் திருநாம காணியாந திருவிழிச்சி
ல் உள்ளூரில் இறை இறுப்பு அரிதாயஸ்ரீபண்டாரத்தில்
தட்டிறை இறுக்கையால் நாங்கள் இவர்க்கு விற்று கு
டுத்த நிலமாவது- பெரியேரி கழனியில் அடைகாடுதெ
ன்கூறு-து ா அமம்-அத்திப்பட்டங் து-உாருமம்-ஊறல்
ஏரிகழனியிலாதிமல்லை நாதனும் - ரெட்டை செறுவும்
தேங்கமகழுவலுமான அற்புதகூத்தனும்- உவாகுண்டி
லும்-பாவசாநியும் நீரோடுகழுவலும். சீ * * * கழு
வலும்- அ௲ து-உதஉா அம - தலைசரிப்பாளத்தில் உ
டையநம்பியும்-கொற்றமானும்-குடி தாங்கியுஞ்-சிவதா

சனும்-பட்டவிருத்தியும்- ஆடு து - ஜசாசமும் - ஆடு
து சதாருய-ஞல் - நிலம் - உடசு - இந்நிலம் - இரண்
டே ஒருமாவரையும் - அற்புத கூத்தனுக்கும் - உவாக்
குண்டிலுக்குங் கிழக்குமனையும் - உள்படப்பையும் -
துசாம் - இவர்க்கு காணியாக பெறும்விலைக்குவிற்று பி
ள்ளையார் ஸ்ரீபண்டாரத்துக்கு கைக்கொட் புதுக்காசு-
ந௱-இக்காசு முன்னூற்றுககும்-விலைக்குறவிற்று கல்வெ
ட்டிக குடுத்தோமிந்நிலங்களுக்கு நீர்பாய வேண்டுவ
தும்-இறைக்கக்கடவதும்-ஏரிகளிலே நீர்பாய வேண்டுங்
கொத்தநீர்பாயவும் இப்படிக்குச் சம்மதித்து கருப்பூ
ருடையானம்பி அற்புதகூத்தர்க்கு கல்வெட்டி குடுத்
தோம். இக்கோயில்ஸ்தாநததோம் - இப்படிக்கு இ
வை தில்லை நாயகன் எழுத்து - இப்படிக்கு இவை இக்
கோயில்காணி உடைய சிவப்ராஹ்மணன் கௌஷித்திரத்து
ஆட்கொண்ட வில்லிசெல்வபிரானான பன்மாஹேஸ்வரப
ட்டன் எழுத்து-இப்படிக்கு இவைகோயில் காணியுடை
ய சிவப்ராஹ்மணன் கௌஷித்திரத்து ஆளுடையான்ஞானம்
பெற்றானான நாற்பத்தெண்ணாயிரபட்டன்எழுத்து-இப்
படிக்கு இவை சிவகாரியம் செம்பியமூவேந்த வேளான்
எழுத்து - இப்படிக்கு இவை கோயில் கணக்கு திருவிழி
ச்சிலுடையான் எழுத்து — இப்படி அறிவேன் திருப்
போரியூர் நாற்பத்தெண்ணாயிர பிள்ளையோன் - இப்படி
அறிவேன் சிறுதாவூர் முறிச்செட்டு நாராயண ஹட்ட
னேன் - இப்படி அறிவேன் சிறுதாவூர் ஆமூர்நாட்டு
வேளானேன் - இப்படி அறிவேன் மாம்பாக்கிழான்
கலினெறிக்கு மறனெறிக்குமறவுக்கு பெரியாண்டா
னேன் - இப்படி அறிவேன் பையனூர் குமோவிசெஜா
ணயபட்டனேன் - இப்படி அறிவேன் பையனூர்மயிந்
திகுறி நாராயண பட்டனேன் - இப்படி அறிவேன் விசு
மூர்கிழவனேன்-இப்படி அறிவேன் மாமல்லபுரத்தோ

ரில் ஆமூர்நாட்டுவேளானேன்-இப்படி அறிவேன் இப்
பிள்ளையார் தேவதருமகுவளைக்கண்ணிமாம்பாககிழான்
விச்சாசிரனேன்.

B.

ஸ்வஸ்தி ஸ்ரீமன்மகாராசாதிராசபரமேஸ்வர ஸ்ரீவீர
ப்பிரதாப விக்கிரம தேவமகாராயர் பிறுதிவீராச்சியம்ப
ண்ணியருளாநின்ற-சகாப்தம் -சுதாருயஎ-மேற்செல்லா
நின்ற மன்மதவருஷத்து மகரநாயற்றுபூறுவபக்ஷத்து
பஞ்சமியும் - புதவாரமும் - உத்திரட்டாதியும் - பிறம்ம
யோகமும் -பாலவகரணமும் பெற்ற-மகரசங்கறம்புண்
ணியகாலத்திலே - செயங்கொண்டசோழமண்டலத்து-
ஆமூர் கோட்டத்து - வடகநாட்டு ஆயிரவேலிப்பற்று
ஆனபூஞ்சேரி திருப்பார்க்கடல் மகாமல்லைபுரத்துபெரு
மாள் - ஆதிவராகம்-ஞானப்பிரான்பாடிவேட்டை திரு
நாள் எழுந்தருளுகிற மண்டபம் சூழ்நாற்பாற்கெல்லை
யும் திம்மப்பனால் சாதனமாகவும்- சுவாமி இறங்குவதற்
குதானமாகவும்-இந்நிலங்கூத்தபாக்கத்தில் வீரயப்பாம்
பன்-அளம்-ஒன்றும்-இந்தப்பெருமாளுக்குபாடிவேட்
டைதிருநாள்ஆசந்திரஸ்தாயியாக இந்தத்தற்மம் விருத்தி
யாய் தானமாகத் திருவேங்களநாயக்கன் விட்டதன்மம்-
ஆசந்திரஸ்தாயியில் நடக்கக்கடவதாகவும்-இந்தநாற் பா
ற்கெல்லையிலும்-இந்த ஒரு அளத்திலும்-உண்டானஇந்த
நிதிக்ஷேபஜலபாஷாண சகலசமுதாயப்பிராப்த்தியும்-இ
ந்த ஞானப்பிரானுக்கே செல்லக்கடவதாகவும். இந்த
தன்மத்துக்கு-அக்கிரமம்பண்ணினவன்-கெங்கைக்கரை
யிலேகபிலைப்பசுவை வதைத்ததோஷத்திலேபோகக்கட
வாராகவும். இந்த தன்மத்துக்கு காணியாளர்-செங்கல
ங்கமார். நயினமுதலியார் - வயிரவநயினார் எழுத்து.
இப்படிக்கு ஊர்க்கணக்கு பையனூருடையான் உத்தம
பிராயன் அன்னப்பன் எழுத்து - ஶூஹஉல.

Engraved by F. G. Hurst, Madras,
from a drawing by G.W.M.

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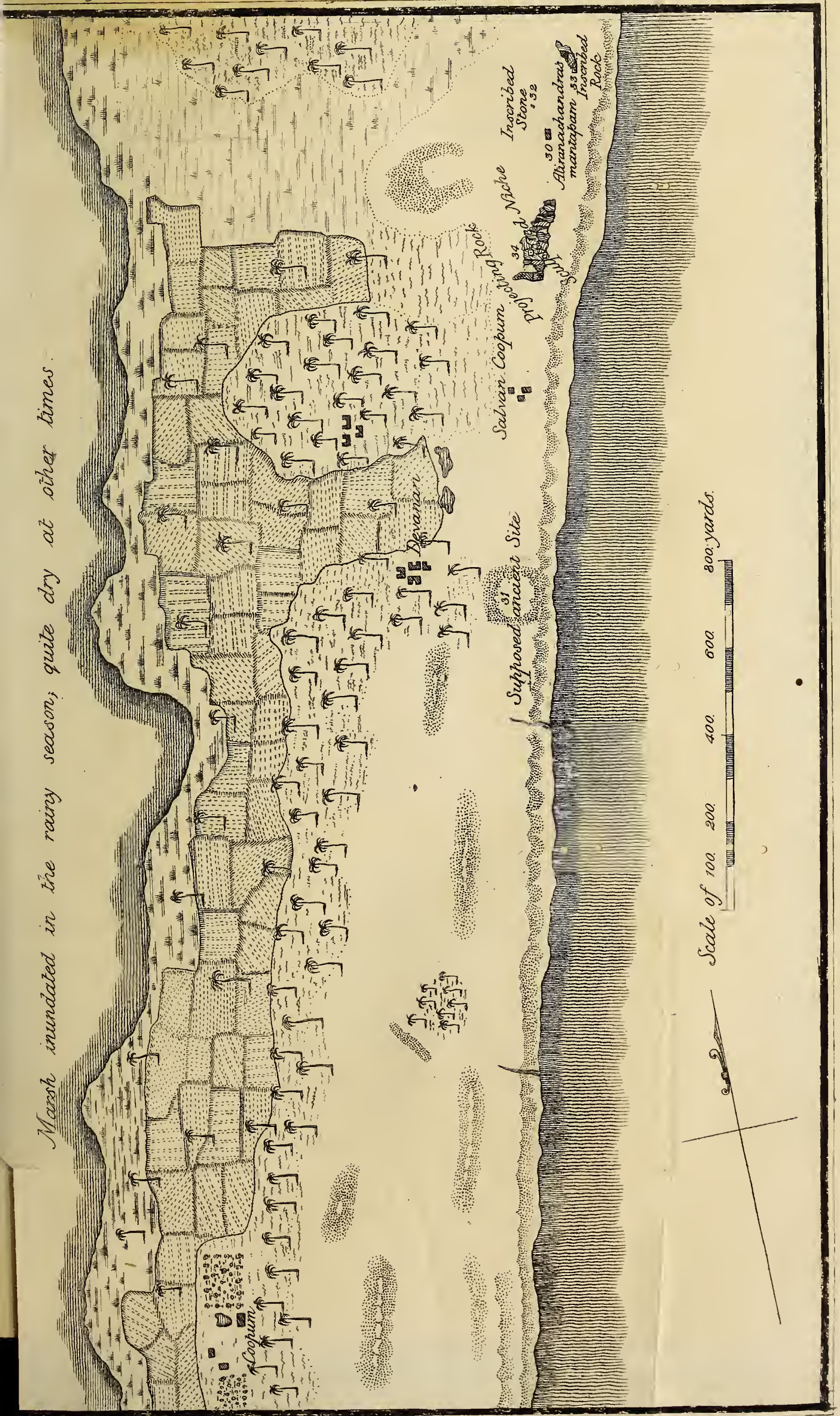


Engraved by F. G. Hurst from a drawing by G.W.M.

NATURAL HISTORY

SIXTH REPORT ON MACKENZIE MANUSCRIPTS.
(Concluding Section.)

A: TAMIL.

a: PALM LEAF MANUSCRIPTS.

II.—*Valli-amma-Puránam,* or legend of the consort of *Subrahmanya.* No. 121. C. M. 42.

Another Copy, No. 122. C. M. 46.

The first of these two MSS. is rather old. It contains from the 1st to the 279th leaf in regular order: and then breaks off, remaining incomplete. The *Puránam* is given in the original form of versification of the *viruttam* stanza, and a prose version of each stanza is added. This copy is slightly damaged by insects; but not to any serious extent.

The other copy is written on broad Talipat leaves, containing the original poetry, without any super-added explanatory version. It is complete: and continues in good preservation.

The whole *puránam* is divided into sixty *sargas,* or sections. It may suffice to give a brief indication of the contents, down to the Episode, whence the production is made to take its name.

1. The enquiry of *Sivacan* made of *Carunam-murti,* from which the production is stated to originate. Invocation as customary. Table of contents. Eulogy of the country, or *Chola-desam.* In the *Cali yuga* 4573. Sal. Sac. 1399, in the time of *Achyuta-rayer,* the writer named *Carunam-murti,* son of *Arulalan* composed this *puránam* in order to remove the effect of an evil denounced by a *Saiva* ascetic, on *Sivacan,* who had intruded on the former's penance, when hunting a deer. The narration is given according to a statement by *Nareda* at the command of *Vyasa.*

2. The Section of the tree of plenty. *Nareda,* the son of *Brahma* took a flower from the said tree which he offered to *Vishnu* in the latter's paradise as an act of homage. *Lacshmi* thence took occasion to enquire of *Vishnu* where the said tree is situated. In reply *Vishnu* informs her of her own birth at the churning of the ocean in the *Cûrma-avatara;* together with the birth of *Sarasvati;* and the productions of various other persons, and things at that time; among them being the said tree; which he finally states is now to be found in the *Dever-loca,* or the world of the gods.

3. The birth of *Cumari.* *Vishnu* going to the said world to fetch the tree in question, agreeably to the earnest desire of *Lacshmi,* found occasion, by the way, to predict the birth of *Cumari,* as the daughter of one named *Vibudhi,* and to announce that she would be married to *Cumara,* the son of *Siva.* He brought the tree to *Lacshmi,* to her great content. According to the prediction *Cumari* was born, as the daughter of *Vibudhi;* and manifesting a great partiality for *Cumara,* her mother *Vibudhi* sent for *Nareda* in order to relate to *Cumari* the actions or exploits of *Subrahmanya.*

4. The legend of *Dacsha's* sacrifice. This legend having been before given, need not be repeated. It is here introduced in order to account for the wife of *Siva,* who lost her life on that occasion, again being born as *Parvati,* the daughter of *Parvata-rayen.*

5. The legend of *Maya* and *Casiyapa.* The celestials having displeased *Siva,* in the aforesaid matter of *Dacsha,* he resolved on humbling them; and to this end sent for *Maya,* directing her to go, and intrude on the penance of *Casiyapa,* and by so doing to nullify its force.

6. The birth of *Suran.* In consequence of *Siva's* instruction, *Suran* was born as the son of *Casiyapa;* and a variety of

other monstrous forms, with a host of minor beings, were also produced.

7. The celestial gifts acquired by *Suran.* By dint of penance directed to *Siva*, *Suran* or *Sura Padma* acquired supernatural powers, and superhuman weapons; with which he invaded the world of the gods, and the world of *Brahma*, and plundered them.

8. The penance of *Indra.* In order to remove the evil, *Indra* performed penance directed to *Siva*, and acquired superior powers to any before possessed: he also received the assurance, that all these evils should be removed by *Armuc'han*, or *Subrahmanya.*

9. The penance of *Siva.* In order to nullify its value, *Brahma Vishnu* and *Indra* sent *Manmata*, who shot at *Siva*, with one of his arrows; and was burnt to ashes in consequence of *Siva's* opening his frontlet eye. *Reti*, his wife, interceded with *Siva*, and received as a boon the assurance that her husband should wear his proper form to her sight alone, but should be invisible to all others.

10. The marriage of *Siva.* On relinquishing his penance, *Siva* formed an attachment to *Parvati*, the daughter of the king of *Himâlaya* mountain, and was married to her.

11. The origin of *Scanda*, or *Subrahmanya.* *Siva* and *Parvati* resided a length of time in the wilderness. In consequence of a very high and unpleasant wind arising, *Siva* darted six fires, from his frontlet eye, to destroy the said wind; these *rayans* were afterwards collected in the *Sarvana* pool, and moulded into the form of *Subrahmanya*, having six faces. The young celestial asked *Brahma* the meaning of the *Pranava* or mystic triliteral syllable; and as Brahma could not tell it, he put *Bramha* in prison. *Siva* hearing of this transaction, sent for *Subrahmanya*, and enquired the reason of this con-

duct. On the latter stating it, *Siva* enquired if he himself knew the meaning of the *Pranava,* which *Subrahmanya* immediately gave, as having overheard it from *Siva.* An order was given to release *Brahma,* which order was obeyed.

12. Relates to the birth of *Hari-hara** as the son of *Siva* and *Vishnu* in the form of *Mohini* (which son is more usually termed *Ayinar,* in the South). *Indra* made a very large wilderness, or paradise, of flowers, and placed guards. *Sura-padma* from ill-will, took the seven kinds of clouds, and bound them in chains, that they might not rain on the said paradise.

13. The origin of the *Caveri* river. The earth remained twelve years without showers. *Agastya* had been sent to the south, having taken some water of the Ganges in his ordinary drinking utensil. *Siva* told *Vinayaca,* or *Ganesa,* to go and upset the said vessel. The latter assumed the form of a crow, and on pretence of sipping, upset the vessel; the water of which flowed out, in three streams, and ran through the aforesaid wilderness. *Agastya* in displeasure struck the crow on the head, and in consequence *Ganesa* obtained the boon that all his worshippers should approach him, striking their heads with their hands or knuckles.

14 *Indrani* consort of *Indra* was imprisoned by *Asvamuc'hi,* one of the brothers of *Sura-padma.* Other instances of oppression by the *asuras* occuring, the celestials went, and proffered a complaint, to *Siva.*

15. In consequence of their complaint, *Siva* asked who was the fittest person to effect the subjugation of the *Asuras,* and the whole of them pointed out *Subrahmanya,* as the proper person to effect the said conquest.

* Not particularized in this abstract. The *Vaishnavas* appear to regard the legend as a sarcasm, invented by the *Saivas.*

16. *Siva* gave orders to *Subrahmanya* to go, and overcome the *asuras;* giving him many celestial weapons, the assistance of *Vira-Bahu* as his General, and countless number of troops.

17. Relates to *Mahendra,* the town of the *asuras.*

18. The embassy of *Vira-Bahu* to enquire if the wives of the celestials would be released from prison, or not. A negative was given.

19. The contest between *Subrahmanya,* with his army, and the forces of *Sura-padma.*

20. The events of the war; the destruction of the *asuras;* the flight of one of them, hiding himself in the sea; the release and restoration of *Indrani,* and the other consorts of the celestials, are narrated.

21. The marriage of *Subrahmanya* with *Deviyani.* The daughter of *Indra* was *Deviyani,* who after various preparations was, with all pomp and splendor, affianced to *Subrahmanya.* The latter afterwards returned to *Cailasa.*

22. Relates to the birth, in mortal form, of the said *Deviyani,* as the daughter of *Vibudhan.*

So much may suffice as to the nature of this *Puranam;* a considerable portion of which is merely an epitome of the *Scanda-puranam.* It does not seem needful to enlarge in the shape of remarks, on the *religion* of the natives.*

2. *Valliyamma-nátaca* No. 123. C. M. 129.

This is a drama founded on the story of *Subrahmanya's* marriage to *Valliyamma.* It is composed in a great variety of metres, as usual in Tamil dramas, and demands no further

*NOTE.—An entry of the MS. occurs in the Des. catal. Vol. 1. p. 174. Art. 31; only one copy being mentioned.

special notice. The book is of recent writing; in good preservation; and appears to be complete.*

3. *Agastya vaidyam Nuttiyanpathu,* or one hundred and fifty stanzas on medicine; said to be by *Agastya.* No. 90, C. M. 250.

This work is complete, and in good order.†

4. *Agastya vaidyam Muputhu,* or thirty stanzas on medicine by *Agastya* No. 86. C. M. 254.

This book is complete, and in good order.‡

5. *Mupu pustakam.* No. 85. C. M. 253.

In this book, parts of two MSS. are contained. One portion by the poet *Conganar,* is entitled *Ubaiya-dicsha,* and relates to ceremonies of initiation, and discipleship. This is complete on thirteen small palm leaves, uninjured.

There follows a medical treatise, of which two palm leaves are deficient, at the beginning, leaving the title uncertain. The medical contents are mingled up with references to the astrological *yogas*; and to ceremonies of the *saiva*-worship.§

6. *Vaidya-suttrum-munnur.* Three hundred stanzas on medicine. No. 87. C. M. 252.

This work is complete, in 300 stanzas, on 68 small palm leaves uninjured. It is ascribed to *Agastya.* It treats on the composition of various medicines, one of them being *amrita-sanjivi,* or a panacea for the prolongation of life. The recipes are numerous.¶

* It is entered in the Des. catal. Vol. 1. p. 215. Art. 7.

† It is entered in Des. catal. Vol. 1. p. 259. Art. vi.

‡ It is entered in Des. catal. Vol. 1. p. 260. Art. ix.

§ Note.—Two copies are entered in the Des. catal. Vol. 1. p. 260. Art. ix. under the title *Muppu,* ascribed to *Agastya.* I have not met with any other distinct book in the collection, bearing such an endorsement.

¶ The book is entered in Des. catal. Vol. 1. p. 259. Art. v.

7. *Vaidya nur* a hundred stanzas on medicine No. 89. C. M. 240.

This tract wants four stanzas at the end: the preceding part is complete, and in good order.

A few leaves, containing another medical tract, called *purna lekiyam* are added: these leaves are damaged at one end.*

8. *Pūrana Sutram.* No. 82. C. M. 243.

This manuscript contains two parts; the first being a medical treatise ascribed to *Agastya,* containing 203 *sutras,* or brief stanzas. The other part contains 201 stanzas, also ascribed to *Agastya,* of which the title is *Pūrănam,* or fulness; being a compendium of ascetic observances, modes of penance, austerities, and the like. Both parts appear to be complete.

9. *Pūrana Sutram.* No. 83. C. M. 244.

There are three parts in this book. The first contains 216 *Sutras* on alchymical preparations, purgative, and other medicines. The second is termed *puja-vidhi,* and contains 199 stanzas of the *viruttam* class, on modes of worship, or homage, in the ritual of idol worship. The third is entitled *dicsha-vidhi,* and contains 201 stanzas, on the modes of initiation to discipleship in the *Saiva* system. The whole book contains 601 stanzas, ascribed to *Agastya;* but, in my view of the case, as a literary device to give authority to the productions of other individuals.

These two books No. 82 and 83, are in good preservation.†

Dr. Ainslie in the Appendix to his Materia Medica of Hindoostan, part 2. has enumerated several works, medical

* The MS. is entered in Des. catal. Vol. 1. 260. Art. viii.

† They are entered in Des. catal. Vol. p. 258 Art. 2.

and others, as ascribed to *Agastya;* among them the *Scanda puranam,* and Madura *puranam,* and also part of the preceding treatises. It would not be among the least of the marvels ascribed to *Agastya,* if all that has been attributed to him, in the way of authorship, were really of his composition.

10. *Devāram,* hymnology. No. 102. C. M. 159.

This manuscript contains a collection of chants, which are said to be the productions of *Appar, Sundarar,* and *Sampantar;* though by one printed account the collection is restricted to the productions of the two last of the three. *Appar* was at first a *Jaina*: concerning him and *Sampantar,* sufficient has been stated in the foregoing portions of my abstracts. *Sundarar* is said to have been born in the Nellore district, and trained at Chellambram. The popular account is, that the three poets travelled about, as minstrels, composing chants in honor of the images at different places visited by them; and such shrines are considered to have received additional lustre thereby. These chants have a reference to *Saiva*-shrines.

The Manuscript wants 23 leaves at the beginning. The remainder is complete: it is only slightly damaged.

Appended is an Index to the contents of the *Tiru-vāchagam,* a kindred production by *Mānica-Vāsacar,* before noticed.*

11. *Manavāla-narayana sataca.* No. 154. C. M. 172.
Another copy „ 153. „ 173.

These are both complete, and very slightly injured, copies of this poem, of one hundred and one stanzas. The work is of a moral, and didactic kind; relating in the first instance to the appendages of a court, and metropolis; and

* The book is entered in the Des. catal. Vol. I. p. 224. Art. xxxiv.

afterwards to various matters pertaining to more ordinary life. It is a very popular work; found in almost every house, and a common school-book. A specimen of the opening contents translated, was published by me in the Appendix to Vol. 2 of Or. Hist: MMS. As a work on manners, and morals, the whole would merit translation. It is composed in the kind of stanza termed *Viruttam;* and, as far as I can ascertain, by one named *Virumatācharya;* though it bears the name of *Manavala-Narayana;* from a merchant of that name having been the poet's patron.*

12.	*Ter-urnta purunam*	No.	15	C. M.	23.
13.	*Ter-urnta vachacam*....	„	108	....	113.
14.	Another Copy.........	„	109	....	115.
15.	*Ter-urnta nataca*.......	„	110	....	114.
16.	Another Copy.........	„	111	....	111.
17.	Ibid....................	„	112	....	112.

The books though in different kinds of composition, and of varying sizes, yet all relate to one common subject; which is, the incident said to have occurred at *Tiruvārur*, when the son of a *Chola*-king, proceeding in his car to view a public procession, at a festival, ran over, and killed an illusive, or symbolical, calf; which said calf was composed of *Siva*, and an aggregate of various other celestials. The whole legend is given, at some length, in my second report. C. Telugu: MS. Book No. 33, Sect. 1. With that statement the books above specified, harmonize in every important point; and it is not needful, by consequence, to repeat an abstract of the subject.

The following notes relate to the condition of the respective books. No. 15 is wholly in verse, of the *Viruttam* species; containing 103 palm leaves, and 163 stanzas. It is complete; and though slightly touched by insects, yet may be

*Both Manuscripts are entered in the Des. catal. vol.1. p. 226, Art. XLIV. but incorrectly, both as to subject, and author.

considered as generally in good order. There is appended a fragment of a poem entitled *Cumarēsa-sataca,* containing 8 leaves, and 29 stanzas ; but not complete.

No. 108 is a plain prose version of the tale, it is slightly touched by insects, but complete.

No. 109 is another copy in a scrawling hand writing ; damaged in one place, by insects, but for the rest, in good order and complete.

No. 110 is a damaged, and incomplete copy, rather old.

No. 111 is not complete at the end, but as far as it goes is in regular series, and in good order ; being quite recent, as to palm-leaves and hand writing.

No. 112 is old and damaged ; the latter portion of different size, and recent appearance. The copy wants the first leaf, and two leaves at the end ; the intermediate portion is in connected order.

The three last copies are of a drama founded on the legendary story ; the composition being made up of prose and verse, of the different species termed *venpa, virattum, taruvu,* and *kocha-cavi,* as usual in dramatic compositions.*

B. TELUGU.

a. Palm-leaf Manuscripts.

1. *Sringāra-Raghavani-prabandhu-Katepalli-vāru vamsi-vali,* or genealogy of a chief of *Katepalli.*

The genealogy is complete ; but apparently other matter ought to follow : if not it is merely a sycophant-effusion. As it is, there is nothing in it of special consequence : it is written

* Note—The *puranam* is entered in Des. catal. Vol. 1. page 167. Art. xv. The *nátacas* at p. 213 Art. 1. (including the two *váchacas*) : five copies are specified ; and I find no notice in the catalogue of the latter, as distinct productions.

in the *Padya-cavyam* measure by *Vencatadri.**

2. *Padmasarasu-mahătmya.* No. 105. C. M. 294.

This "legend of the flower stream" is intended to fix the birth, or at least the re-appearance of *Lacshmi,* in her lotus flower, in the *Svarnamuc'hi* river, that flows past Tripeti. *Brighu,* the great sage, felt disposed to test the longanimity, or good temper, of *Vishnu,* to see if he really possessed divinity; and, for that purpose, rudely kicked Vishnu† on the breast, which treatment the divinity meekly bore; and *Brighu,* now convinced, abounded in praises; declaring that *Vishnu* was god, and that there was no god besides *Vishnu.* The consort of the latter was not quite so gentle; and, being indignant that her lord should submit to be kicked by a mortal, ran away; descended to the inferior world; resided near to *Capila,* (a partial incarnation of *Vishnu*); and, at length, honored with her presence the *Svarna-muc'hi* river. *Sarasavati,* received a celestial communication to go and seek out the fugitive, with some indication as to place; and succeeded in finding her, lotus-throned, in the aforesaid stream. A reconciliation following, *Laschmi* now dwells with *Vishnu,* as *Vencata-svami,* at Tripeti. The author has written, or, quoted, the legend in Sanscrit, adding a Telugu version in the *Padya-Cavyam* metre.‡

3. *Ahobala Pandityam.* No.. 91. C. M. 485.

This work named after the author, and by himself termed *Cavisirópushana,* is an explanatory gloss, on the work of

* Note.—It is fresh in appearance, and in perfect condition; a brief but accurate entry occurs in the Des. catal. Vol 1. p. 339. Art. 57.

† In the last part of the *Padma-purănam,* and in the 10th book of the *Bhagavatam,* the like treatment from *Brighu* is stated to have been exhibited towards *Brahma* and *Siva,* with a different result in each case.

‡ Note—The document is deficient at the end. It is recent, and only very slightly punctured by insects, an entry will be found in Des. catal. Vol. 1. p. 227. Art. 21.

Nannaiya Bhatt, on Telugu prosody, and grammar. The work is largely illustrated by Sanscrit authorities and references, and the use, or meaning, of terms defined from the Sanscrit. It bears the character of being a valuable work, on the subject of which it principally treats. The author, being a votary of *Rama,* has connected with the production extensive eulogy of his patron god.*

4. *Samudrica-Lacshanam,* or Palmistry. No. 113.

C. M. 451.

The title denotes the quality or character of moles, warts, or other marks, on the body ; and is taken technicaly for a treatise on that subject, including palmistry, or fortune telling by inspecting the lines of the hands. It also derives prognostics of good or evil, from the size and relative proportion of the different members of the body ; for example, long arms, and long slender fingers, are deemed fortunate ; and one of very large body, and very long feet will be always poor. It is however superfluous to enter into details.

The Manuscript is damaged by a few of the leaves being broken, and others perforated by insects ; it is also very incomplete, there being only 13 palm leaves out of a book, which, if entire, ought to contain more than a hundred. The author's name was *Annaiya.*†

5. *Vaidya pustaca.* A Medical treatise. No. 127. C. M. 498.

This book, according to its title, treats on diseases ; such as fever, head-ache, cholic, &c., together with medical preparations and prescriptions. It is written on *Talipat*-leaves,

* Note.—The work is complete in five parts, and is in extremely good preservation. It is entered in the Des. catal. Vol. 1. p. 352. Art 2.

† It is entered in Des. catal. Vol. 1 p. 356 Art. 2.

in a rather rude and peculiar hand: and is in very good preservation, though incomplete, wanting some leaves at the end.*

6. *Atmanātma-vivēcam,* a treatise on mental, or intellectual, knowledge.

This work is a translation from the Sanscrit; and may be stated to contain two grand divisions, which relate to the divine, and human, nature.

1. In the divinity there are three forms, or hypostases, actuated by one pervading mind. The three forms are *Brahma, Vishnu, Siva,* whose bodies are respectively red, blue, and white. In the pervading mind there are five properties, or powers, analogous to five senses. They are one in counsel, diverse in operation: *Brahma* creating, *Vishnu* preserving, *Siva* destroying. There is only one Supreme in the Universe, denoted by the term *Trimurti.*

2. In the human nature there is a compound of body and soul. In the mind, or soul, there are five senses. In the body there are seven vital airs, which operate in various ways, by pulsation, &c. In the body there are nine apertures. The perfection of human nature consists in the restraint of the five senses, seven vital airs, and nine apertures; the mind being fixed in contemplating the Supreme, who has five powers, and diversely operates by three forms, as Creator, Preserver, and Destroyer.

Remarks.—This is the primitive *Hindu* system; and *mutatis-mutandis,* it might be the composition of a Talmudical-Rabbi. Both classes of writers probably derived much from Noachical traditions. There are minuter statements, both as to the Divine qualities or powers, and human faculties, than I have brought into this brief Abstract. It seems

* It is entered in Des. catal. Vol. 1 p. 357. Art. 4.

to me to negative the assertion, which has been very confidently made, in the analysis of Ancient and Hindu Mythology by Col. Vans Kennedy, that a Triad, with one pervading mind is a dogma unknown to Hinduism. The work I think is valuable. Very different, and very greatly depreciated (to use a gentle term), are the views and dogmas, both of the *Vaishnavas* and *Saivas* of the Peninsula ; especially of the ultra-classes ; as the readers of these reports cannot but have perceived. This book is also opposed to the *Advaita* system of *Sancarăcharya* and his followers : who deny the reality of any distinction between the Divine Being and the human soul. I have long wished to trace (these) depreciations, differences and oppositions, in a distinct Essay, which I think would be a subject of commanding interest and utility ; if performed by no better hand, I may one day hope to make the endeavour.

NOTE.—The manuscript is old, and has several leaves injured by wear, and partial breaking by reason of usage ; it wants only the first leaf which probably would only have the invocation and name of the translator. The commencement itself of the treatise is found ; some breaks in the coherency of the composition, arise, from the injury sustained. On the whole this is a document which I should like to see well translated : with moderate care it will last, as it is, for some years. It is entered in the Des. Catal. Vol. 1. p. 348. Art. 70.

7. *Vijaya-vilasa,* a Poem, No. 45. C. M. 462.

Reference to the five *Pandavas,* and to *Drăupadi* their wife. The adventure of *Arjuna* in recovering the stolen cow of a *Brahman.* *Arjuna's* pilgrimage to the great rivers in the Peninsula. Near the Godavery river he formed a loose marriage with *Uluchi,* a woman of an outcast tribe. Going to *Manipuram* (jewel town), a mutual attachment arose between him and *Chitrangada* the King's daughter ; a son being the issue of their marriage. After a circuitous pilgrimage, *Arjuna* went to the Court of *Crishna,* where he

married the sister of *Crishna*, by a stratagem; much to the discontent of *Crishna's* elder brother *Bala-Rama.*

The work is not complete, the first three or four leaves are wanting at the beginning; hence the Poet's patron, by name, is not now found in the book. His own name is stated to be *Vencata-Raja;* who however may have had some other name, or title. The remains of the sections in the *Padya-cavyam* measure are found; if complete, as I am told, the work contains six sections. The leaves, in the beginning, are broken off at the ends, the remainder is of fresh appearance, and in good preservation.*

8. *Samba-vilasam,* a Poem. No. 67. C. M. 404.

This Poem, in the *Padya-cavya* metre, relates to the adventures of *Sāmba,* a son of *Crishna,* who associated with the *Chengi*-people or wild foresters; and ultimately carried off a daughter of *Duryodhana.* It is founded in a part of the *Bhāgavatam.* The author's name is *Vencata-ramana.* The beginning, and three following sections, are contained in this MS.; but other sections are wanted to complete the work. It is old, and slightly injured by insects; but not to any serious extent.†

9, *Kirātarjunya.* No. 28.

10. Same title. No. 83. C M. 379.

The subject of this Poem, in *Padya-cavyam* metre, is the penance of *Arjuna* near the *Himālaya* mountain; and the battle between him and *Siva,* disguised as a hunter, which led to the obtaining, by *Arjuna,* of super-human weapons.

The two copies are very incomplete; and, in consequence the writer's name does not appear, in either of them. In both

* Note.—It is entered in the Des. catal. Vol. 1. p. 343. Art. 65.

† Note.—It is entered in Des. catal. Vol. 1. p. 336. Art. 52.

copies, old and recent, leaves are mingled. They are in moderately good preservation, though with slight exceptions.*

11. *Andhra-sabda, Caumudi.* No. 33. C. M. 488.

This is a fragment of nearly seven palm leaves, of recent appearance, and writing, from what, if complete, would be a large Manuscript. The work properly is a rhetorical, or poetical, grammar, on the art of poetry. If this be the copy originally supplied to the collection, it is as gross a fraud as could be made; but since the appearance of the leaves and writing, indicate neither more, nor less than ten or twelve years, for its age, it is just possible, that it may be a fraudulent substitute at some recent period for the original copy.†

12. *Bassavana-Cālagnyānam,* No. 128. C. M. 332.

This Manuscript relates to the period of *Pratāpa-Rudra* of *Warankal*; apparently the last of that name, who was captured by the Mahomedans. But the chief subject of the book is to detail the progress, and success, of the *Vira-Saiva* sect, or ultra-class of *Saivas,* sometimes termed *Jangamas;* of whom *Bassavanna,* or *Bassavesvara,* was a distinguished votary, and minister of *Vijala-raja.* This sect proceeded on the principle of subduing, and exterminating, opposers by any means whatsoever; whether of force, fraud, or guile. Battles and slaughter are narrated in this work. According to the title of *Cālagnyānam,* or "knowledge of time," it contains statements, assumed to be prophetic, as given forth by *Siva* with regard to future events. This notice is very brief, and insufficient. Let me add therefore that, not so much with respect to history as to manners, it might be desirable to have a translation. It is written in rather elevated prose, is complete; and, on the whole is in tolerably good preservation.‡

* Note.—They are entered in the Des. catal. Vol. 1. p. 329. Art. 33.

† It is entered without any note of defect in Des. catal. Vol. 1. p. 354 Art. 5.

‡ Note.—It is entered in Des. catal. Vol. 1. p. 313. Art. 18.

b. Manuscript Books.

Manuscript Book, No. 4. C. M. 897.

In this thin folio, the 1st Section, containing rules for sale, and mortgage of lands, in Malayalam and Telugu, was abstracted under the head of Malayalam papers in a foregoing report.

Section 2. Rules embodied in verses on the authority of Pandits, in the Malayalam country.

Nothing answering to the section-heading appears; unless the interlined version in Telugu of the contents of the foregoing section in Malayalam be intended thereby; as possibly is the case.

Section 3. Account of *Rama-Raja,* the King of Travancore.

The writer records the substance of what he had gathered, from conversation, and from records.

He gives a detail of twelve Kings who ruled over *Venăttanad* (another name for Travancore) derived partly from books, partly from verbal enquiries.

1. In *Collam* era 588, *Kerala-kula Sec'hara-Perumal* being dead:

2. *Sec'hara-kula-sec'hara* ruled down to *Col.* era 636.

3. *Sancara-sri-vira rama martanda Perumăl* ruled to *Col.* era 685.

4. *Iravi verma Perumăl,* down to 742.

5. *Vira-udiya-martanda Perumal* down to 762. Having no posterity, he in *Col.* era 758 adopted.

6. *Martanda-raja,* who ruled down to 842. He repaired the fane of *Padma năbha-svami,* which had gone to decay. From his great age he was termed *kilava-murti.*

7. *Martanda-Perumal,* ruled down to 852, who, being childless, adopted

8. *Attankal-murti-raja.* He adopted a son from another tribe. He caused a large full-length likeness of himself, painted on cloth, to be placed in the fane of *Chandra St'ha-lam.* He also had the *Tiruvancotu-Calipanams* (coins) stamped in his own image. He ruled down to 875. He is said to have been treasonably killed by the device of some woman of the *attankal* tribe.

9 *Rama-verma-kula-sec'hara-Perumal,* who ruled down to 904 : he was succeeded by his son-in-law.

10. *Martanda-verma-kula-sec'hara Perumal,* who ruled down to 933. Some persons termed *Kunchi-tambi-mar,* and *Madambamãr,* plotted to take away his life, by means of poison; learning which he put them to death. In order to take away the guilt of doing so, he built 108 houses, as *agrahārams* for Brahmans; naming the said village *Ananta-samudra.* He carefully attended to the forts on hills, and passes, throughout his country. He also built 41 Choultries, or lodging houses, for travellers. He placed two pillars of gold and silver in each of the fanes of *Padmanābha-svami* and *Crishna-svami.* With a view to secure the skilfulness of his successor, and to guard against any hostile attacks of neighbours, he made over the whole of the Travancore country, being 52 *kadams* in length, and the same in breadth, to the fane of *Ananta-Padma-nābha-svāmi,* commemorating the same by copper plate inscriptions in many parts of the country; and assuming to himself the title of "the slave of *Padmanābha.*" He was succeeded by his son-in-law.

11. *Padmanābha-dasa unchi-bala rama kula sec'hara Perumāl;* that is to say, "*Vishnu* the crown-jewel of his race, the local *Bala-rama,* and slave of Padmanābha," He ruled from 933 down to 976. Desiring to go on pilgrimage to *Ramêsaram,* he obtained passports both from the English,

and Willaet (Mahomedans.) He also raised troops on every side, to repel the invasion by Tippu-Sultan. Subsequently he chose two females as his wives, and was succeeded by the son of the elder of the two; named

12. *Rama-verma kula sec'hara Perumāl,* who ruled from 973 down to 985. He was succeeded by

13. *Lacshmi raja rani*; who was ruling when the account was written. A genealogical plan of her family is given; some being dead, others alive.

Section 4. Genealogy of the *Keralatti sorubam,* or *Cherakal-rajas.*

The account commences with the *Cali-yuga* year 3549, and the rule of the eighteenth *Cheruman Perumal* in the fort termed *Cheruman,* who married two foreign wives. In *Cali Yugam* 3550, the Rayer invaded the country; the son of one of the above wives, named *Udiya verma-raja* went and repelled the invasion; and, in consequence, had bestowed on him a considerable extent of country as an inheritance. Three of his family ruled after him; among whom, and himself, he had previously shared the province. But they afterwards requested him to govern the whole. Subsequent chiefs were subservient to the English, French and Dutch; and at length became mere expectants for favor in a state of dependance.

Section 5. General sketch of ancient rajas in the Malayalam country.

Referenee to *Parasa-Rama* and his division of the entire country into *Tula-nád* and *Chera-nád;* and each of these into 32 districts, or 64 in all. He gave 10½ of these districts to 36,000 Brahmans, who were of 14 *gotras,* or tribes. *Parasu-Rama* gave them his weapon, and with it the sovereignty of the land. He retired to do penance on *Mahendra* mountain. The Brahmans who formed a great deliberative

council ultimately disagreed among themselves, and introduced a King from *Kaya-puram.* Eighteen Kings ruled during 198 Years and 8 Months, of which rule details exist (not stated in the paper). One named *Cherumán Perumal* was among them, and ruled 36 years with celebrity. He built many fanes, and made large donatives. It is found, by some old records, that he ruled about Cali Yugam 3500.

Section. 6. Genealogical account of the *Cheracal*-rajas.

This section repeats, somewhat more fully, the reference to *Parasu-Rama* and the *Brahmans.* It mentions his dividing the kingdom into three portions. *Tuluva, Mushica,* and *Kerala.* When the *Brahmans* disagreed they called in a *Chola* king. In other matters the details are very similar to those of the two foregoing sections : down to the gift of a principality to *Udiya-verma-raja.* Thenceforward the details are local. Some names of successors are given, and spaces for other names left blank. Downwards the details are but of minor importance ; yet merit being consulted. The paper, on the whole, is a rather interesting document.

Section 7. Inquiries and replies, relative to customs, and rules of adoption, in the Travancore, and *Cheracal* principalities.

These inquiries were propounded by Mr. Baber a judge ; and are evidently intended to obtain information on that intricate subject ; respecting which the local usages of the Malayalam country are peculiar. The contents are not capable of being abstracted, and have no material reference to the present object of research.

General Remark.—The first section was heretofore copied, and the second has since been restored ; in consequence of its being written on China paper, and the ink on two pages so pale, as to be with difficulty legible. The remaining sections are in good preservation.

Bala-Bhāgavatam, an epitome of the *Bhāgavatam.* No. 41. C. M. 296.

The contents of this moderate size quarto are the substance of the *Bhāgavata purāna*, in a poetical abridgment by *Conerinat'ha* son of *Nagaya mantri,* and of *Lacshmi;* the whole reduced to five *scandams* or books. At the close of each book, a summary of the contents is given. It does not appear requisite to repeat these in detail. Many of the stanzas are imperfect; probably owing to being copied from an old, and partially illegible, Manuscript.

Remark.—The volume is in tolerably good preservation. Insects have slightly attacked it; but, as yet, the injury is not serious. It will last long with only moderate care.*

Sacala-Cadha-sāra-sangraha, the substance of many tales. No. 9. C. M. 401.

The same in continuation. No. 10. C. M. 402.

The literal rendering of the little would be "the epitome of *all* stories." The contents are:

1. The account of the death of *Paricshit.*
2. The narrative of *Haris-chandra.*
3. The tale of *Nala-Chacraverti.*
4. The story of *Purucucsha.*
5. The adventures of *Purūruva.*
6. The narrative of *Bhagirat'ha.*
7. The history of *Kartavirya,* and *Parasu-Rama.*

Probably it may have been intended to add other narratives, as the work does not appear to be finished.

Remark.—Insects have somewhat injured No. 9. the other is very slightly touched. A little care only is needed in order to their preservation.†

*Note.--It is entered in Des. catal. Vol. 1. p. 280. Art. 27.

† Note.--Both books are entered in Des. Catal. vol. 1. p. 336. Art. 53.

Manuscript Book, No. 59. C. M. 49.

Section 5. Account of *Cota*-village.

The first formation of the village is dated in Sal. Sac 513. A reference to *Tondaman Chacraverti*, and his works at Tripeti. An individual became possessed with the spirit of an evil goddess, directing a fane to be built to her honor; which was done. Reference is made to the ascendancy of the *Jaina* rule; both here, and at Conjeveram. Under the government of one of those chiefs this shrine went to decay. The *Reddis* of *Telingana* acquired authority; and afterwards the *Vellugotivāru*, had the government. In Sal. Sac. 1380, some proceedings took place with reference chiefly to hierarchical buildings. The details which follow are not of any material consequence. At the close a list of buildings, groves, and reservoirs, is appended.*

C. CANARESE.

Manuscript Book. No. 14. C. M. 880.

Section 1. Account of *Sulekeravu* in the district of *Santebenur*. One leaf is wanting. The fragment begins with an account of the cattle of the district, and similar minor matters, of no consequence.

Sec. 2. Account of *Sante benur*.

The district was a forest, or wilderness, in the time of *Hari hara Rayen* of *Vijayanagarum*, which was cleared and cultivated. It continued a part of that kingdom down to the time of *Crishna Rayer*. *Vencana Nayak, Sita Ramasvami nayak*, and the latter's son, *Hanumanta nayak*, ruled as local chiefs. The fane of *Rama chandra* is an *anādi Sthala* (one without beginning) or a very ancient one. In Sal. Sac. 1519. a *tir t'ha*, or water reservoir, was excavated, near the said fane. In Sal. Sac. 1551 (A. D. 1629.) the Mahomedans having

*Note.—The paper or material of the book is in very good preservation, the other sections are in the Mahratti language; and have been abstracted under that heading in the proper place.

acquired power, threw down the said fane; and constructed a mosque from its materials. It was afterwards under Hyder Ali, and shared in the general results; needless to be particularized.

Another account of *Sule Keravu.*

The legend goes back to the time of *Vicramāditya,* in whose time a cow was observed to go to an ant-hill, to be eased of milk; which action arresting attention, the ant-hill was dug up, and "a self-formed emblem of *Siva*" was found, over which a shrine was constructed. An *amman,* or goddess, was wanting, and the King gave his own daughter. *Siva* came personally in human form, and was married to her. On mounting the car it moved of itself; and went as far as *Rama-giri* where it stopped. In the morning the newly married pair were found to be transformed to stone images; and the garments of the bride were lying on the earth: upon taking which up, and shaking them, gold coins fell to the ground in abundance; with which the goddess commanded a *Mandapa,* and water-reservoir, to be formed. In digging the reservoir an inundation occurred, which swallowed up a village; the inhabitants barely escaping with their lives; and the lake became one of wide extent.

Remark.—Such is the Legend, intended seemingly to account for the lake, which the word *keravu* denotes: the term *Sulē,* being a distinctive prefix. This paper only occupies two pages, in small hand-writing; and may pass current for all that it is worth.

Account of the district of *Pārur;* (not sectionized in the table of contents.)

Of old it was a forest. One named *Casya-rayen* cleared the land; built a town, and small fortress; established a police, and ruled there. His son was *Yellapa-nayak;* whose son was *Immadi rangahapa-nayak.* His son was *Vencatapa-*

nayak, who built a fane to *Tiru-malēsvarer.* His son *Casturi-ranghapa-nayak* was warlike, and subdued some neighbouring places. The descendants proceed as follows •

1. Methivera nayak.
2. Chica methivera nayak.
3. Muddana nayak.
4. Chica nayak.
5. Barumapa nayak.
6. Methivera nayak.
7. Casturi ranghapa nayak.
8. Methevira nayak.

During the rule of this latter chief the Mahrattas from *Pūna* made an irruption, and established their own government. At a later period it was under the rule of Hyder Ali. Subsequent to the conquest of Seringapatam by the English, this district came under the power of *Crishna-raja-udiyar* of Mysore. It is mentioned that there are some large upper storied houses in the district, with much remaining forest land, and many wild beasts ; also that a superior kind of *Camblis,* or native blankets, were made, and sold, there.

Section 3. Account of *Pāvagudi* hill.

Three hundred years ago it was a wild forest, tenanted by tigers, and other animals. One *Sangama-rayeu* came from the *Rayer's* country, cleared some land, and built thereon a residence. The *Rayer* wished to take *Gutti,* but was unable to do so ; on which one *Pedda Balapa-nayak* volunteered his services, and succeeding by stratagem, established the *rayer's* power over that fortress. He was of the Herdsman class. He thenceforward had a post of trust confided to him ; together with a body of troops under his command. Such being the case, the aforesaid *Sangama-rayer* was guilty of cruelties, and other misconduct, which *Balapa nayak,* hearing off, went against him at the head of three hundred men, seized him, put him to the sword, and assumed the government. He built a small military post at *Mata-giri,* in consequence of its having the natural appearance of a snake. Soon after he heard of abuses and disorders, among the head people at *Pennaconda.* He went thither, and conquering those petty

chiefs, fixed his own power there. He wrote to the *Rayer*, who being pleased at the intelligence, came to *Pennacondà*, and specially honored *Balapa-nayak*, with a fine horse, and certain other distinctions. He also had him formally instituted to the Feudal sovereignty of *Pavugudi* in Sal. Sac. 1426 (A. D. 1504) and bestowed some additional territory. While so governing, *Balapa nayak* caused the fane of *Venu gopala svami* to be constructed. He had two sons; and was succeeded, after his death, by *Chinna Valapa nayak*, who ruled a little time, and then his younger brother named *Timmapa-nayak* succeeded him; whose son was *Balapa nayak*. The succession proceeded as follows.

Tatapa nayak ....his youngest brother.
Timmapa nayak.......son of the latter.
Balapa-nayak.
Timmapa nayak.
Tatapa nayak..........ruled 12 years.
Timmapa nayak.
Balapa nayak.
Balapa nayak.
Timmapa nayak.......who was for a long time shut up in prison; but being taken thence and crowned, he ruled 24 years. He has three sons: the eldest was

Pedda-timmapa nayak, who ruled five years. He caused a water course to be cut; while he was ruling the Mahrattas came from *Pūna*, and took the place. It also came under the power of Hyder, and Tippu, and went with the subsequent transfer of dominion. The fort has eight gates: guns are mounted. It has four fanes of the *Saiva* class. There are also lofty houses; and wild beasts are in the neighbourhood. Blankets are manufactured, and iron is found, in the district.

Section 4. Notice respecting modes of Mahratti writing.

In the *Pāvugudi* district the Brahmans make use of the *Balband* characters in their sacred books. In ordinary secular transactions the common form of Mahratti writing is used. The *Balband* is used because the *Nagari* is reputed to *Deva-lipi* or divine writing.

Section 5. Account of *Mandana Misra.*

Sancarācharya was an incarnation of *Isvara.* He devoted himself to an ascetic life; travelled to many places; made many votaries and founded the *Advita* sect. An attempt, made by one of another sect, to have him assassinated was removed by the messenger relenting at the sight of so distinguished a man. *Sancara acharya*, went through the air, to the place of *Mandana Misra;* overcame him; made him one of his followers; and afterwards brought over his household, by means which are intimated according to the common statement; needless to be detailed; though important in its place, if the claims of a teacher who asserted the deity and the human soul to be one, and indivisible, should be thought to need any further evidence to adjust their merit and importance.

Section 6. Legend of the *Tungabhadra* river and of *Hari hara cshetram.*

There is a hill called *Vāraha parvatam,* from which one river flows westward, and another eastward: the latter being the above mentioned one. A legend is attached going up to the time of *Vishnu's* performing the *Varāha avatar. Tunga* and *Bhadra* are names of the two lengendary persons, given to two streams, which join, and thenceforward the river bears the name of *Tungabhadra.* It flows by *Sri-sailam* to the west, and then uniting with the *Crishna* river flows with it to the sea.

The legend of the *Hari hara* fane is attached; going up to the *Kreta yuga*, or earliest age. Its veracity and importance, are about equal. It may however be noted that the image is said to be very splendid, and on one side to present the form of *Vishnu*, and the other that of *Siva*. Hence it may be inferred that the shrine is one of some antiquity. There are eleven *sacred* pools, the names of which are specified; with an indication of the benefits derivable from bathing in them.

Section 7. Account of *Chica nayakacota*, in Mysore.

A Fragment of four pages in the Telugu language. The said *Chica nayak* emigrated from the Guntoor district; and, by the favor of *Bāhgavati*, established himself in power at *Chitra durga* (Chittle droog,) where he built a small fort, and thence subjugated the surrounding country. He ruled 12 years. His son *Baramapa nayak* governed 24 Years. The son of the latter was *Hari methivira nayak*, who went against *Sante Benur*; but was repulsed by the chiefs of that neighbourhood. Returning to his own fort, he had some guns, and other matters very carefully prepared, and going again to the assault, captured the place; but the dispute was settled by the chief giving his daughter in marriage to the assailant; who next proceeded to attack *Raya durga* (Roydroog), *Murari nayak*, with some troops, made him raise the seige. After six months he came back, and massacred several persons, which raised the population against him; and these beat him, and drove him away. His son was *Casturi nayak*, of whom it is only recorded that he massacred all the women in the interior of the palace. The times of Hyder Ali succeeded; and the fragment breaks off; a leaf or two appearing to have been torn out of the book.

General Remark.—The contents of this book are of but very moderate, and local, consequence. However, exclusive of further elucidating the childishness of superstition, they

throw additional light on the troubled internal state of parts of India; where any one, who could succeed in placing himself at the head of a band of robbers, soon became a chieftain, and a terror to all around. It is a preparatory period of mercy to India to be formed into one grand empire; wherein such depredators dare not, and cannot, appear. Whatever may remain to be remedied, the blessings of internal peace, and regular government, ought not to be lightly estimated. It is a means towards an end, of still higher consequence.*

Manuscript Book. No. 37. C. M. 530.

Bhuvana cosa, a system of *Hindu* geography.

An account of the *Pauranic* system of the world; intermingled with notices of individuals, also recorded in the *Puranas.* The book is not complete; but it is, on the whole, in tolerably good preservation.†

Suca-saptati, or tales of a Parrot.

This book requires no other notice, than simply the mention, that its condition is not good. It is complete. The writing is legible, and will long continue so; but the paper has been heretofore repaired. It does not require further attention.‡

Manuscript Book. No. 8. C. M. 874.

Section. 1. Account of *Jamālabad* in Mysore.

In the *Kreta yuga,* the hill was known; and *Brahma* gave some gifts to *Somacāsura* and *Dhenucāsura,* on their performing penance there. Being *asuras* they took away the *Vedas,* and hid them in the sea. Hence the *Matsya avatara.* Reference to *Parasu Rama,* in the *Treta yuga,* when the hill

* Note.—The condition of the book is not very good, but it will last, and remain legible for many years to come; the abstract given is rather full; and it does not seem, for the present, to claim restoration.

† It is entered in Des.: Catal: Vol. 2. p. 35. Art. 42.

‡ An entry occurs in Des: Catal: Vol. 2. p. 59. Art. 15.

was rescued from the sea ; and to the five *Pandavas* in the *Dwāpara yuga.* In the *Cali yuga* the name of *Mayura verma* occurs ; and his location of new Brahmans in his dominions is noted. An amazing transit is then made to the time of Hyder Ali ; the object of the writing being only to give an account of the hill, not of history. Tippu Sultan built on, and fortified, the hill. He placed it in charge of a killadar. It received from him the name of *Jamālabad,* its ancient name having been *Sandacùr.*

Section 2. Account of *Sringeri* the monasterium founded by *Sancarācharya.*

Reference to the pauranical admeasurement of the world ; and to lower, and to upper worlds. Boundaries of the *Dwipas.* A long detail of legendary matter follows ; being chiefly tales from the *Puranas,* of no other reference than merely to introduce the mention of a *rishi,* who made this the site of penance, whence it came to be called *Rishisingapuram ;* but in ordinary Canarese usage it is now termed *Sringeri.* In the *Cali Yuga* the incarnation of *Sancarācharya* took place. He established the monasterium ; and some mention is added of similar places also founded by him.

Section 3. Account of rivers in the *Nagara*-district.

A few details of the rise, course, and termination, of four or five rivers, and legendary account of their origin.

Section 4. Account of the *Nagara*-district.

A list is given of a district chief, and his descendants, down to the time of Hyder. There are no events, but merely names, recorded ; and the name of *Basavapa nayak* and *Chinna Basavapa nayak* recur, in almost constant alternation. The list does not seem to me of much authenticity. There may be a foundation of truth ; and it would seem that these chiefs were all of the *Jangama* class.

Remark.—The two first sections are written on good French paper, with pale ink: the whole is in very good preservation.

The remaining sections in the book are all in the Mahratti language and character; and have otherwise been attended to in a preceding Report.

Pūrātana-ragala, or ancient devotees.		No. 23. C. M. 499
	same title	„ 24. C. M. 500
	Ib.	„ 25. C. M. 507

These books relate to the life, and remarkable actions, of sixty three especially distinguished votaries of the *Saiva* sect, in high esteem with the *Vira-Saivas.* In Tamil the work is entitled *Periya-puranam,* or the great legend. As a sufficient notice, or abstract of that *puranam,* will be given from the Tamil, any further specification of these books is not required. The general outline of contents in both is the same.*

D. MAHRATTI.

Manuscript Book. No. 59. C. M. 749.

Section 1. Account of *Sri-hara cota* in *Telingana*: Derived from verbal accounts of the *Carnics,* and other revenue officers. Anciently it was a forest. Legendary reference to *Trisancu,* a king of the solar race; to whom the first building of a town is ascribed. Mention of *Pandurangha* fane, to which a sea shell annually went by a subterraneous passage from the sea, yielding certain sounds; and attended with fabulous circumstances. Great rewards being offered for the shell, it was at length found. As a result the sea-king being incensed, sent a flood which destroyed the town of the other king aforesaid. People say that beneath the waters the remains of a town can be seen. Further account of the deri-

* Note.—The books are in good preservation, they are entered in Des. Catal. Vol. 2. p. 26. Art. 22.

vation of the name. The Mahomedan rule of the country is adverted to. It is added that a *Saiva-fane,* and a *Vaishnavá-*fane, are situated in this locality.

Remark.—The legend seems intended to account for the Pulicat lake.

Another account follows, relative to the same place. In this *Rama* and *Hanuman* are mentioned, and the bridge connecting the continent with Ceylon. The purport of the tradition is to commemorate an inroad made by the sea on the Coast.

Section 2. Account of *Muga-raz-patnam,* in *Telingana.*

Verbal account from the *Carnic.* Reference to the reign of *Druhva,* who is made to visit Vellore, and to have established the town of *Mugaraz.* Many came to it, in trading. The name of *Sada siva rayer* occurs in reference to a local change. The place afterwards was under the Mahomedans of Golconda. A detail is given of towns, and forts built by different Kings. All have gone to decay. *Timma raz* had them restored. Little else of importance appears ; previous to the mention of the rule of the Hon'ble Company.

Section 3. Account of *Vendanapuni.*

It is three miles S. of Nellore. Reference to the formation of the *Svarnā muc'hi* river by *Agastya.* All seems the merest legend, down to the mention of *Tondaman-Chacraverti,* who as herein stated in *Sal. Sac.* 518. (A. D. 696.) had the neighbourhood cleared and built a town with a fane ; wherein all usual appointments were made, and the customary observances followed.

Remark.—The above date is of importance. It is later than other accounts mention, but very probably near the truth.

Section 4. Account of *Guda-liki.*

Anciently a hill, near at hand, was called *Bhimēsvara*; and thereat *Brahma* performed penance. *Rishis* resided there. The name arose from the junction of the *Svarna-muchi,* and *Bhimanadi,* rivers at this place. Nothing further occurs of the smallest consequence.

Section 5. Account of *Cota* village in *Telingana.*

This section is in Telugu, to be noted in another place.

Section 6. Account of *Mālpatnam* in *Telingana.*

A dispute occurred between *Brahma* and *Subrahmanya*, in consequence of which the latter took from *Brahma,* his implements of creating, and himself set about doing the handy work of a creator, at *Sesāchala* (Tripety), with the said implements. *Brahma* preferred a complaint to *Siva*; who decided that it was proper for every one to attend to his own work; and directed *Subrahmanya* to return to *Brahma* his implements, and to leave off creating.

The name of that place was *Vinacāvanam:* it was a wilderness where *Mālāsura, arācshasa* did penance to *Siva,* and obtained the boon that he should not be liable to be killed by any one, either by day, or by night; with the privilege of conquering all with whom he might wage war. After obtaining such a boon he greatly molested the ascetics that dwelt in the wilderness; to relieve whom *Subrahmanya* came, and killed the said *Mālāsura,* in the *Sandhi,* or short twilight interval between day and night; not however without first complying with a request proffered by the *asura,* to the effect that a fane should be built there, bearing his name. Some time after the *Chola-raja* came to that neighbourhood, and directed the forest to be cleared, which was then thickly set with bamboos. One day, when the

workmen were engaged in cutting away the wood, blood copiously flowed, consequent to their doing so in a certain place; inducing them to leave off, and report the circumstance. The King came in person to investigate it; and, on looking further, an image of *Subrahmanya* was found to have been grown over by the wood, having its arms cut off, from which blood flowed in profusion. Efforts were made to deprecate the anger of the god; a vision of whom appeared to the *raja*, instructing him to build a fane on that spot, and to call it by the name of *Mālāsura*; which was accordingly done. *Visvacarma* superintended the work: and a *Mandapa* built there was so particularly handsome, that people who came from Conjeveram wished to have it removed thither. A young man, the son of an architect, engaged to effect this transit, and had prepared a machine for the purpose with some horses; but his father learning the design, cut off the horses legs, and so the *Mandapa* remained immoveable.

At a later period when the fanes at Conjeveram had gone to decay, and all allowances to them had ceased, *Sancaracharya*, having become incarnate, formed an image of clay at that place, and appointed certain observances; which were effected chiefly by means of the tribe of weavers. It is said that the original shrine is neglected; and that formed by *Sancaracharya* alone honored.

After the Mahomedans had acquired power at *Vencatagiri* they came hither, and learning the celebrity of the fane of *Subrahmanya*, under the name of *Mālāsura*, they gave it jaghirs, or gifts of land. There are some inscriptions; which however could not be successfully read or copied. Tradition stated that they commemorated grants by *Chola-rajas*.

Remark.—This paper, with its fabulous wildness, contains one or two points worth attending to; the document is in extremely good preservation.

Section 7. Account of commercial ports, and factories, on the coast.

This section merely contains the names of some obscure places, in the Nellore district, where trading used to be carried on by vessels; with the nature of imports, and exports, and mention of places to which export were made.

Section 8. Division of the Carnatic.

A list merely of the names of 112 places under the title of "pergunnahs," into which the Carnatic, in revenue matters was divided.

Section 9. Statements of Revenue.

This is merely a statistical memorandum of the revenues of the Arcot-Soubah, or kingdom under the Mahomedans.

Section 10. Duties of various offices.

A mention of nine official situations of revenue, or police, under the Arcot-government, when mahomedan: with a definition of the duties attached to each office.

Section 11. "General history of the Carnatic by the *Muzamdar*," (or accountant of the country.)

This title is copied from the hand writing of Colonel Mackenzie. It has a reference to some very early matters; with a legendary story to account for the existence of the *Dandacaranya,* or great Peninsular wilderness. A transit is made to Rama, and his son Lava. Some matters, lower down, are adverted to; the authenticity of which may be estimated by *Salivahana* being made to follow the *Chola rājas.* The *Rāyer* and *Yādava,* dynasties are mentioned, as also the transition of power to the Mahomedans, and finally to the English.

Remark.—The document does not seem of much consequence, nor yet to have been drawn up with much attention to accuracy. The above outline is very brief; but the paper remains in good preservation, for further reference, if thought at any time desirable.

E. Manuscript Books of Miscellaneous Inscriptions.

There are several of these books in the collection, containing copies of inscriptions in two, three, or more languages; so as not well to allow of being arranged under the usual order of my reports. By consequence they are here placed as a distinct subdivision, according to language. The order will be Persian, Mahratta, Canarese and Telugu.

1. PERSIAN.

M. S. Book No. 9, C. M. 978. *Ancola* and *Gokernam* Districts.

1. Dated 1044—Hegira. A *firman* addressed to Cazi Ahmed, assenting to the request of the said Ahmed, who had stated that, in consequence of his own great age, he wished his situation to be given to his son Taj u'Din Mahomed. Issued by a Divan whose name is not in this copy.

2. *Firman* of a Divan addressed to the inhabitants of Agra, dated in 1068—Hegira. It directs that all things, as before observed in the fame of *Rama-chundra,* be continued; and is perhaps a renewed grant, at the commencement of a new reign.

3. Order of Sultan Mahomed Padsha to the Amil, or Collector of Agra, to renew a Sunnud, or grant, as before customary, for allowances to a Mosque. Dated in 1079—Hegira.

4. Dated in 1077—Hegira. Order to continue a charitable grant of 124 huns, arising from a village, to a person mentioned; descending to his children, and grand children.

5. Order to an Amil in 1088, to continue, as before, all allowances customary to the Ramani Mosque, in charge of Hafiz Mahomed.

6. Another copy of 1. addressed to Cazi Ahmed.

M. S. Book No. 13. C. M. 982. Nellore and Vencatagiri Districts.

1. Dated 1002 Hegira—Order of Asuph u Dowlah Syed Mahomed Khan, Mahomed Alemguir Padshah and Mir Hussein Khan, addressed to *Bangura Yachama Nayadu, raja* of *Vencatagiri,* directing him to collect, and forward the entire tribute of that principality; amounting to seventeen lakhs, seventeen thousand, nine hundred and five *Daums* (a kind of weight) which *Cumara Yachama Nayadu* had neglected to transmit in due time.

2. Seal of Asaph u Dowlah, conferring a title with an office on *Bangara Yachama Nayadu.*

3. Seal of Asaph u Dowlah Amir of Inde; a letter to *Cumara Yachama Nayadu* of *Vencatagiri* condoling with him on his father's death; assenting to his succession to the principality, with an injunction, requiring careful obedience.

4. Order of same on the death of *Cumara Yachama Nayadu,* conferring authority, and the succession upon *Bangara Yachama Nayadu.*

Sundry items and memoranda follow of very minute details, as to pergunnahs, and revenues.

M. S. Book No. 32. C. M. 1001. *Sedhawattam* in the Ceded Districts.

1. Date of death of Bismilla Shah (in 1186—Hegira) the head of a company of Mahomedan mendicant devotees.

2. Dated in 1181 as that of the building of a mosque, and

of another, in the time of Nabob Abdul Mazid in 12-4. Another in 1114—Hegira.

3. Confirmation by Nabob Sadut ulla Khan of a grant in the pergunnah of *Sidhur,* to a Derveish and his family. Dated in 1143—Hegira.

4. Another copy of the same document.

5. Title of an agreement in the name of *Rama Crishna ;* a memorandum.

6. Order to the Amils of Balaghat from Nabob Hakim Mahomed Nabi, to permit *Papa Rao* to bring certain waste lands in *Sidhur* into a state fit for cultivation. Dated in 1776.

7. Date 1183 of the building a mosque in the fort of Cuddapah ; in the dominions of Alemguir.

8. Date 1130 of the building of a mosque, by Nabob Bahalul Khan.

9. Date 1149—Hegira, as that of the death of Ameen u Din Shah.

10. A few loose names ; scribblings by individuals, like those more or less common in all countries. The dates 1109 and 1159 appear attached to three names.

M. S. Book No. 38. C. M. 1007. *Garamconda* in the Ceded Districts.

A Parvannah, or order, from Sadat ulla Khan relative to the fane of *Ekambésvara* and *Cámácshi* at Conjeveram, empowering one *Acasa Bhonji* to collect the revenues from lands made over to the said fane ; and, after paying all needful expenses, to hand over the balance to the revenue manager of the district, with a strict injunction to all inhabitants of the neighbourhood, to respect the orders of the said *Acasa-Bhonji.*

M. S. Book No. 42. C. M. 1011. Cuddapah.

A Parvannah of Nabob Syed Khan under Alemguir Padshah; a tract of land, of the annual value of two crores, confirmed in the possession of Sheikh Makhdum.

M. S. Book No. 27. C. M. 996.

1. Order from a king (name not mentioned) to a military chief, dated in Hegira 1092, giving a commission, and instructions, with reference to an accompanying counsellor.

2. Order of Nizam ul Mulkuzuph jah, to discharge a servant, and to put Syed alla u din in his place, dated 1206. Hegira.

3. Dated 1140.—Hegira. Abdul nabi khan gives an order to *Malla-reddi* directing him to keep a proper watch over a certain district, and to apprehend the robbers by whom it was molested.

4. Order to *Malla-reddi* to collect the revenue; and to see the army supplied.

5. Order to *Verd-reddi* to collect the sum of 355 *huns,* in the district of Ginjee.

6. Order to *Malla-reddi* to regulate the needful matters at Singhapatnam.

M. S. Book No. 28. C. M. 997.

1. Dated in Hegira, 1152, order from a Khan or chief, to the Amil (or Collector) and inhabitants of Ginjee to give possession of a certain extent of land, to the daughter of a derveish, after the father's death.

2. Order from the same, to the same; to make over to Budr u din son of Sheikh Mahomed, a garden and a mosque, which had been held by the father in the fort of Ginjee.

3. A memorandum respecting a transfer of property, situat-

ed in, or near, the same fortress.

4. Also an unimportant document relative to a transfer of land in the neighbourhood of the same place.

5. Order to give some ground ; the proceeds to supply oil for a mosque.

6. Dated in 1117. Fusly. An order in two languages respecting transfer of land to be given in free tenure.

7. Order of Zulfecar Khan to the commander of Ginjee, to supply needful matters of expenditure in a mosque, chargeable on the revenues of a village.

8. A revenue grant to the Cadi of a mosque, dated in Hegira 1184.

9. Order of Tippu Sultan to the commander of Ginjee to supply 80 huns from a certain revenue, to the revenue officer, and to give all other proceeds for the maintenance of lights on Friday, in a large mosque.

10. Deposition of witnesses that an individual possessed a grant which he had since lost.

11. Order to make over a certain extent of land, the proceeds to supply oil to a mosque for lights.

12. A similar order, relative to a village mosque.

13. An appointment of an individual to be Cazi of Candicotta.

14. Order of Zulfecar Khan to supply one rupee daily to a Cazi, named Mahomed Hussan.

15. A precisely similar order.

16. A similar order, dated Hegira 1134.

17. Order to transfer the allowance of Mahomed Hussan (No. 14.) to his grandson, dated Hegira, 1177.

18. Order to give land; the proceeds to supply oil for a mosque dated in Hegira 1186.

19. Agreement by *Raja Chandu-lal,* in the name of another person, to cultivate certain lands carefully, and peaceably to render in the revenue due thereon.

20. Order of a Padshah to the Amil of Candicotta to give a certain village district, in lieu of another one, which had been assumed; the order is in favor of Mahomed Derveish, son of Sheikh ali. Dated 1074.

21. Gift of twenty bigahs of land to Sheikh Mahomed Derveish conformably to his petition, to supply lights to the mosque.

22. Order of Satkhan to give a small piece of land to a person that had the charge of keeping the mosque, in Rajpallam. Dated in Hegira. 1149.

23. Order to give a portion of land in the said village of Rajpallam, to Mahbu Ali Derveish. Dated in Hegira. 1164.

24. Direction to repair certain water reservoirs, and fit them for assisting cultivation. Dated in Hegira. 1149.

25. A similar order relative to tank repairs, and directions to give a fourth part of proceeds as tax to the revenue. Dated in Hegira. 1157.

26. Order to give fruits of a specified garden to Rosham Khan. Dated Hegira. 1162.

27. Commission to the said Rosham Khan to be commander of a fort and troops, from Mahomed dil Khan, servant of a Padshah. Dated in Hegira. 1122.

28. Order of Mahomed Khan, in the kingdom of Bijapur, in favor of *Raghavachary,* giving to him a piece of land. Dated in Hegira. 1127.

29. Order to take annually seventy huns, as a tax from *Nanachary.* Dated in Hegira. 1152.

30. Order of Zulfecar khan in favor of *Tāttācharya,* giving a grant of land for his subsistence.

31. Order to give a revenue of 125 huns to *Tāttācharya* from a village. By whom given not stated. No date.

32. Restoration of a former grant in favor of a *Brahman,* directed to be made by the assistant of *Chandu-lal.* No date.

M. S. Book No. 33. C. M. 1002.

1. Order of Tippu Sultan, to give a village to *Binachary* in the Cuddapah District, on the condition of his paying an annual tax of twenty huns.

2. Relates to Madras. Purports to be a promise from the Governor to *Mallapa-nayadu palliycarer,* to restore to him certain patrimonial lands, on condition of his accompanying the army sent against Mysore, and obeying the order of the English General; the restored lands to be subject to a tax. Dated in Hegira, 1305.

3. Order to supply one fanam daily to a heathen fane at *Vencatapur.* Dated in Hegira, 1214.

4. Dated in Hegira—1277. Order confirming a former allowance of two fanams daily to the same fane.

5. Commemorating the building of a mosque, in order to dissipate heathen superstition. Dated in Hegira—1128. It is a writing on the wall of the mosque.

6. Donation, by *Alemguir* to *Mallapa-Náyadu,* of certain proceeds from a village. The order is directed to *Ananta rao*

7. Gift of an office to *Kistna* Pandit.

8. The said *Kistna* Pandit is ordered to pay annually one hundred *chacrams,* as a tax on a village which had been made over to him: Dated in Hegira—1144.

MAHRATTI.

M. S. Book No. 9. C. M. 978.

No. 6. At the town of Mirjaun : copy of a revenue letter, or order, directing one *Maniji-rao-Ganapati* to pay up arrears of tax, or tribute. Dated in Hegira—1104.

No. 7. At Mirjaun. A reply apparently to the foregoing, stating, that 40 huns are sent out of the 200 due.

Copy of Inam, or deed of gift, from Sadu Rustam Khan, a servant of the Visiapur Padshah, making over land to *Crishna Bhat,* son of *Narayana Bhat,* dated in Sal. Sac. 1578.

The *Nayak* of Angola with his tribe made over certain allowances for food and support to *Crishna* an astrologer. Dated in Sal. Sac. 1561.

Two Hindu *employés* of the Visiapur Padshah, built an *agraharam* for *Crishna Bhat,* an astrologer, and along therewith gave to him land, producing a yearly revenue of 54 huns. Copy of the document was written in S. S. 1571, and transmitted to the Padsha.

Certain *Congani Brahmans* of the Angola province, having met in council, agreed to build a *matam,* or residence, for their preceptor, *Yedhesvara,* and to purchase some land to be attached to it, to provide ordinary support for the preceptor, and his pupils: apparently a miniature college. The copy was written by *Ibrahim Khan* in Sal. Sac. 1521. The document is Canarese, in the Mahratti character.

Copy of an inscription from the fane of *Mahabaleshvar,* recording a donation of land made by *Singaiya Pant,* to the

daughter of the *Peishwah.* The date given is Sal. Sac. 1738. The language is Canarese, with Sanscrit *slocas* intermingled: the whole written in the Mahratti character.

M. S. Book No. 38. C. M. 1007.

1. Copy of an order from the Cuddapah Nabob, directing Abdulla Ali to discharge the duties of provincial Subadar; specifying the amount of revenues, the same to be collected without molesting or injuring the inhabitants; with expressions highly complimentary to the person employed, dated Fusly 1170.

2. Investiture by the Cuddapah Nabob of *Vencata-rao* to the office of Mirasidar, or proprietor of *Siddhawar,* dated Fusly 1186.

3. Same date; corresponding order to the inhabitants of *Siddháwar,* informing them of the appointment of *Vencata-rao,* and directing them to obey him.

4. Accompanying order to the Subadar of the district, directing him to see that no arrears should be allowed to accumulate, by the said *Vencata-rao;* but that all balances should be regularly paid.

5. One Rustam Khan having resigned office, the Nabob directs Jemmadar Bhai to look to the case; and give to the person resigning (pension as supposed) according to custom.

6. The Cuddapah Nabob directs land to the annual value of 34 *huns,* to be given to Syed din Khan, in approval of his faithful services in the revenue department. Dated Hegira 1186.

7. *Vencata-rao* having represented that certain lands which had been granted to his ancestors as *Purohita Brahmans* had been seized, the Cuddapah Nabob writes to Mulamir Saheb, directing him to investigate the matter, and to restore the

said lands according to former usage. Dated in Hegira 1119.

8. Dated in Fusly 1172, an agreement from four persons to rent certain lands, and to pay, to the capital, the tax ; or tribute thence arising, to a greater amount, and more faithfully than had been before done.

9. A farmer under the Cuddapah Nabob writes to his agent, or steward, to remit balance due on the *Velur* talook. Dated Fusly 1174.

10. The same person writes to two other factors, ordering them to pay up arrears due.

11. The same person gives instructions to spend 25 *huns* for the construction of a *Cshetram* (or *serai*) for travellers.

12. Order to give some lands as an endowment to the said *serai*, in order to supply it with food. A person is nominated to superintend the charity.

— Order of *Baji Rao* and *Raghanat'ha* addressed to *Sesāchala-nayak*, directing him to go and assume charge of *Garamconda* village, and to remit its proceeds amounting annually to 3,500 Rupees to the said Mahratti rulers. Date of month ; but not of year.

— From the same to the same. Stating that his message sent by an individual named, had been received and understood ; assuring him that false representations against him had not been attended to ; instructing him to go on with his duty ; and if he had any thing very special to state, he might personally come to their court and detail it before them.

M. S. Book No. 27. C. M. 996.

A commission from *Baji-rao* and *Raganatha,* dated from Poonah, giving the village of *Gutivigam,* as revenue charge, to

Narayana-rao, and directing him to collect, and remit, the proceeds arising therefrom.

— Order to the villagers of the same place to obey *Narayana-rao,* as Revenue Collector.

Receipt from *Madhava-rao,* Treasurer to *Narayana-rao* aforesaid for 3,000 Rupees, which had been paid into the Peishwa's treasury.

M. S. Book. No. 28. C. M. 997.

— Commission from *Baji-rao* to *Sesāchala Pant* to discharge the duties of Subadar of the district of *Cudakol.* Date of month, but not of year.

— Specification of accounts from *Sesachala Pant,* and two other persons of the Cuddapah district. Sent into the government of the day.

— Grant of the village of Jemmalabad to one named Hussein, dated in Fusly 1180.

— Informations to inhabitants of the said grant.

— Gift of land from Mahomed Shah to a Brahman dated in Fusly 1182.

— Gift of *Mapul* village to *Srinivasa Brahman,* with the condition of paying one fanam out of every three fanams to the Sircar, or Government.

Gift of some lands, to the same individual, in free tenure.

— Gift of land to *Kishna Pundit* from *Vencata-rao,* dated in 1188 Hegira.

— Order dated Hegira 1128, addressed to an individual, directing him to collect and transmit certain arrears which had fallen behind in the district of *Pembavapettah.* Issued by the Visiapur ruler.

— Order from Visiapur to the inhabitants of *Pembana* village, to pay up all arrears to *Raghunatāhācharya.*

M. S. Book. No. 33. C. M. 1002.

1. A revenue order providing that *Bhimācharya* should pay a quit rent of 25 Pagodas for the village of *Mallapālayam,* held by him in tenure. Dated in Hegira 1151.

2. Dated in Hegira 1193. Gift by Nabob *Mirali* of two villages to *Seshapa,* for services rendered in the management of revenue.

3. Dated Hegira 1190. Gift of land producing 50 Pagodas annually by *Anaverdin,* a Nabob, to an inmate of his household to supply flowers.

4. Order to a Hindu to pay 35 Pagodas to the government, from the revenues of a village.

5. The *Peishwah* directs that on occasion of all marriages one Rupee shall be paid, by the parties to a fane of *Narasimha-svāmi ;* ordered in consequence of a representation from the hierophant, of a deficiency of sacerdotal supplies.

6. Order from a treasurer to a tenant, telling him to pay the 12,000 Rupees due, and obtain a receipt; and that nothing further was necessary.

7. Reply to a representaion that owing to want of rain, a tax of 1,200 Rupees could not be paid : the reply directs that the sum be paid ; not all at once ; but by two or three instalments.

8. A new order on the same subject.

9. Order for the transfer of a village to another tenant from the *Peishwah.*

10. Gift from the *Peishwah* of two villages to Meramudin.

11. Order to collect tax and pay it into the public treasury.

12. Summons to an individual to appear in "the presence;" in consequence of a defalcation in the amount of collections.

13. Directions to the same individual to meet *Raghunat'ha-rao* at *Garumconda.*

The whole of the remaining contents, in the Mahratti language, have been gone through; and carefully examined; but as they offer nothing more important than the preceding minutiæ, it seems useless to write them out in detail. The only exceptions are the gift of two *agraharams,* as of some consequence; and an order from Tippoo Sultan to make an allowance to the fane at Tripeti; but even these are not subjects of magnitude. The book is very incorrectly labelled "Ancient Inscriptions, illustrative of the Hindoo history of the South of the Peninsula;" and the title inside "52 Grants in the Cuddapah Tukodi of the Ceded Districts," is only a little less free from exception. At some period there must have been some fraudulent design to *magnify.* The book is a little damaged by worms; but the entire contents appear to be of very little consequence.

M. S. Book. No. 43. C. M. 1012.

This book is labelled like the preceding one, and inside "204 Grants in the *Chamur* district." The larger portion of the contents is in Persian and Canarese. Small portions in Mahratti are scattered throughout; and they relate to trifling matters. Such things as the grant of one Rupee weekly to a Mahomedan ascetic; of two annas daily to another; and of one fanam per diem to maintain lamps in different mosques, are the prevailing contents. A few grants of no great importance appear. The whole relates to Mahome-

dan transactions, with Mahomedans, or with Hindus ; and the parsimony of Mahomedan donations compared with those of Hindus to their own idols, as seen in inscriptions before reported, is very apparent. There are some orders, (or Sunnuds) authorizing certain Hindu astrologers to receive eight *pice* daily ; in other cases half a fanam daily. A receipt is prescribed to be taken.

This Book is in an extremely good state of preservation.

The Canarese portion of the contents are yet to be reported.

M. S. Book No. 44. C. M. 1013.

A similar label, and entry. The contents are chiefly Canarese. There is a little Mahratta : as follows,

1. Dated in Sal. Sac. 1670. Gift in free tenure of land to the value of 25 Pagodas annually from the *Senāpati,* or general of the *Peishwah,* named *Madhava-Rao,* to a Hindu named *Vencata Bhatt.*

2. Order from *Baji Rao* to give, in a specified instance, a marriage portion according to the custom of antiquity.

3. Order from the *Sidhavur* capital to give to a Brahman, an estate producing 100 Pagodas annually.

4. A similar order, from the same place to give to a *Sudra*-Jemmadar, an estate of 50 Pagodas per annum.

5. Corresponding orders with the two last, certifying the same to villagers, and others concerned.

M. S. Book No. 41. C. M. 1010

This Book, with like label and inner title, is much damaged. The greater portion of the contents is in Canarese ; but there is some Mahratti. The whole of this last has been care-

fully examined; and is found to contain grants, for the most part in free tenure, to individuals; usually worth about 50 Pagodas *per annum.* This being the uniform character of the grants, any minute specification, of matters of such small consequence, is not required.

M. S. Book No. 45. C. M. 1014.

Like label and title. The Mahratti forms but a part only of the contents, with a few grants of similar character to those just indicated; the remainder is occupied with agreements, and transactions of *Sayers,* or petty renters, and farmers, of ordinary commodities. They claim no detailed notice.

M. S. Book No. 11. C. M. 980.

Like label; and the title inside refers to the Mysore country. About half of the contents of this Book are in Mahratti. In one place a grant, by *Sada Siva rayer* in the latter part of the 16th century, is mentioned. In another place a modern grant by *Raja Crishna* Udiyar of Mysore, and the building a fane, with the customary donatives, by *Purnaiya* his minister of state, are recorded. These are the most important. There is mention of the foundation of a few *Brahman's* alms houses; but the greater part of the matter is a sort of revenue correspondence, in the details of collecting and payment; with occasional letters of threatening, or dismissal, for non-payment. The whole of this latter part either refers to the Sultan government (that of Tippoo) or to the subsequent adjustment of the country. This notice of the Mahratti contents may suffice. The whole has received an attentive investigation, before forming this opinion. The paper of the book is a little damaged by insects.

M. S. Book No. 17. C. M. 986.

There are only three small leaves of Mahratti writing in this book; and the contents relate solely to the petitions of four

individuals, to have lands restored to them, which had been seized. One estate was worth 50 Pagodas annually, and one worth only five. Their claims were conceded.

M. S. Book No. 30. C. M. 999.

There is only a little Mahratti scattered through this book, and the subjects of these brief notes are transactions of Mahomedan chiefs and managers, in matters of local revenue. One or two foundations of *Brahmans*-alms houses are mentioned; and are the most important part; but the whole amounts to very little. The book is in good preservation.

M. S. Book No. 26. C. M. 995.

There is a little Mahratti writing at the end of this book, which on examination proved to be only copies of letters on revenue subjects, under the government of the Mahomedans. The letters are from revenue officers, addressed to renters or farmers on minor topics; and, by no strain of words, can possibly come under the discription of "Ancient Inscriptions illustrative of Hindu history &c.," endorsed, as in the preceding cases, on the outer label. In most of the preceeding instances, such a title is much too magniloquent.

M. S. Book. No. 2. C. M. 971.

This is the second of the series so endorsed, it is a superior folio. About one fourth towards the end is in Mahratti, and contains copies of Inscriptions, which however relate entirely to the Mahrattas, and are of modern times, as well as of trifling moment. The first of the series is dated Sal. Sac. 1693. (A. D. 1770) and records that Meer Sahib had investigated, and restored, certain rights granted by Mahrattas, previous to his authority. What follows, prevailingly, has no other date than that of the day and month, and relates to small grants by *Sambaji*; by the *Peishwah* or *Simantar*; lower

down the date Sal. Sac. 1625 (A. D. 1703,) occurs ; and these two dates of years are the only ones met with. The matter of the different inscriptions, chiefly relates to grants of land to individuals, either for military, or revenue service. The Mahrattas do not appear to have cared much for shrines, or fanes. What they gave seems generally to have been for something either received, or expected, of a tangible, and secular, character.

HALA CANADA.

M. S. Book No. 9. C. M. 978

Inscriptions in *Ancola* and *Gokernam* districts.

1. Dated in Sal. Sac. 1661. Gift to the fane of *Viknesvara* at *Upina patnam,* both of money and lands by *Appaji nayak.*

2. No date of year. *Vira Bhadran* made a gift of land to the fane of *Abhaya-aster.*

3. Dated in Sal. Sac. 1307, (erroneous.) A gift by *Crishna Rayer* of *Vijayanagaram* of a village to *Rama Chandra,* a spiritual preceptor.

4. Cycle year only mentioned. Gift of a piece of land, under permission, from the capital at *Anangundi* to the monasterium at *Upina-patnam*

5. No. date. Gift of land to the same place by one named *Bhadran* in *Basava-puram,* confirmed by a sanction from *Anangundi.* The inscription is stated to be sealed with the *Saiva* symbol ; indicating the said monasterium to have belonged to the *Jangamas.*

6. A similar gift to the same place, under like sanction from *Anangundi.* A cycle year only is specified.

7. A similar gift of a piece of land, which was purchased at the cost of twenty-five *huns,* or Pagodas ; the inscription bearing the like seal.

8. Gift by *Basarapa-nayak* of the line of *Sadasiva-nayak*, a local chief, of some land to the monasterium of *Mahenti*. No other than the cycle year.

9. Dated in Sal. Sac. 1638. Gift of twelve *huns* or Pagodas, to the aforesaid place, by the said *Basavapa*.

10. Dated in Sal. Sac. 1643. Gift of sixty *huns* to the *Mahenti matam* in *Upina patnam*, by one named *Conapa-nayak*.

11. Dated in Sal. Sac. 860. Gift of a village in the district of *Pindi-valam* to a fane in the time of *Rama dēva arasu* a king of the *Cadamba* dynasty.

12. Gift of a piece of land purchased for 12 *huns* in order to build a fane to *Hanumān*, afterwards constructed thereon. Cycle year only specified.

13. Gift of a small piece of land, which cost 3 *huns* to *Gokernam*; by a woman who went thither to bathe at the time of an eclipse. She was the mother of *Somasechara-nayak*, a local chief, who confirmed the grant.

14. Gift of a piece of land which cost 28 *huns* to another fane, on the banks of a river. Cycle year stated.

15. Gift of land bought for 32 *huns* to the fane of *Mahabaleshvara* at *Gokernam* by *Basavapa-nayak*. Cycle year mentioned.

16. Gift of land bought for 50 *huns* to carry on the car festival, in the fane of *Sada-siva*, on the banks of a river.

17. Land which cost 3 *huns* given to the fane of *Gokernam*.

18. Land which cost 12 *huns* to *Mahabaleshvara* fane at *Gokernam*.

19. Land of the value of 3 *huns* given to the fane of *Cumb'hakerna-esvara* at *Gokernam*.

20. Cycle year. Gift of 6 *huns* to the fane of *Galagatesvara*, at *Gokernam.*

21. Gift of land to the value of 9 *huns* by a devotee; in consequence of his coming to perform the *rudra-namascara,* a ceremony of homage to *Siva,* at *Gokernam.*

22. Gift of land, by a servant.

23. Gift of land to *Gokernam* worth six *huns.*

24. A like gift to the value of 12 *huns.*

25. A similar small gift worth 4 *huns.*

26. The like; value 3 *huns.*

27. The like; value 6 *huns.*

28. *Ibid,* nine *huns.* 29. *The like* value 10 *huns.*

30. *Ibid,* 6 *huns.* 31. *Ibid,* 12 *huns.* 32. *Ibid,* 12 *huns.* 33. *Ibid,* 12 huns.

34. Dated in Sal. Sac. 1475, in the time of *Sada-siva-rayer:* gift of a village to the fane of *Gokernam;* but this inscription is not complete.

The preceding ones from 24 to 33 all relate to the fane at *Gokernam,* being presents by votaries. The fane is of great repute, but either the value of the *huns* must be greater than in the Carnatic, or else the liberality, or means, of votaries much less than in the farther south. The Canarese copies of Inscriptions in this book are comparatively fruitless.

M. S. Book No. 26. C. M. 995.

There is only a little Canarese in this book.

1. Dated in S. S. 1620; gift of land to two *Musjids* or mosques in the village of *Cambacachi* in the hands of Mir Hussein.

2. Relates to a restoration of rights; usurped by Tippoo Sultan, and returned by Colonel Reid, when Collector in the Ceded Districts.

M. S. Book No. 11. C. M. 980.

1. Dated in Sal. Sac. 1469 in the time of *Sriranga rayer.* Gift of a village to a fane.

2. Dated in S. S. 1353. Gift of five villages to a fane of *Virapacsha* by *Accana nayak* and *Madhana nayak.*

3. Dated in S. S. 1195. Gift of a village to a fane, by two local chiefs of the *Chola* kingdom.

4. Dated in Sal. Sac. 1122. Commemorates some repairs to a *Saiva* fane in *Deva Nallur.*

5. Dated in Sal. Sac. 1327. A copper plate inscription. A gift of land by *Timma rayer* to a fane, and to *Brahmans*; with heavy denunciations appended against any alienation of the gift to other purposes.

6. Dated in S. S. 1339. In the time of *Deva rayer;* commemorates a gift of land to the fane of *Mulavacal* by the minister of *Deva-rayer.*

7. Dated in S. S. 1389. Gift of some lands to conduct ceremonial worship in a fane, by a private individual.

8. Dated in S. S. 1439. Gift of land to the value annually of 30 *huns* by *Crishna rayer* to *Narasimha-pattar* in the district of Gooty.

9. Dated in S. S. 1564. Gift of land to a *Brahman.*

10. Dated in S. S. 1666. Commemorates similar gifts to *Brahmans* by a local chief named *Basavapa-nayak.*

11. Dated in S. S. 1620. Gift to *Bhima pattar,* a *Brah-*

man, from a local chief of a village.

12. A letter on revenue affairs.

13. Another letter on the like subject.

14. Dated in S. S. 1586. Gift of a village to a *Brahman* from *Chicka-deva rayer.*

15. Dated in S. S. 1484. Gift by some chiefs, or courtiers, in the time of *Rama-deva-raya ;* gift of a village to *Timmana-pattar* a Brahman. Recorded on a copper plate.

16. Dated in Sal. Sac. 1487. A similar gift.

17. 18 are of no consequence. 19. Dated in Sal. Sac. 1336. Gift of a village by *Deva-rayer* to a *Vira Saiva Brahman.*

20. Dated in Sal. Sac. 1437. Gift of land to a *Brahman* in the time of *Crishna-rayer.*

21. A fragment.

22. Dated in Sal. Sac. 1196. Gift of land.

23. Gift of land –no date ; except a statement, that it was in the time of *Buka rayer's* son, named *Hari Hara raya.*

24. Dated in S. S. 1486. Gift of a village in the *Santē Benur* District, to a *Brahman,* from two local chiefs.

25. Unimportant, 26 the same ; being merely copies of two letters, on an insignificant gift.

A note was before made on the Mahratti contents of this volume. The entire contents of the book do not seem to be of consequence ; though a few of the dates of Canarese inscriptions are of value.

TELUGU.

1. Inscription in the Nellore district in a Choultry. Dated Sal. Sac. 1575. It commemorates the excavation of a water-reservoir by *Mutipa Crishna nayak* a local chief.

2. No date. Gift of a piece of land to a fane.

3. Dated in Sal. Sac. 1220. Gift of some land to two *Vaishnava* fanes.

4. Cycle year only. It communicates the formation of a causeway, and road, near a lake.

5. An account, traditionally given by an inhabitant of *Vencatagiri,* of some matters relative to the inheritance of his ancestors, of very trifling consequence.

6. Dated in Sal. Sac. 1641. It relates to a gift of land in free tenure to an individual, whose name is given.

7. Some traditional statements by a resident in a village, named *Conēsvarra-palli;* relative to his patrimonial inheritance.

8. Statement by *Suba-sastri.* His father received a gift from a chief of the *Vellugotivāra* race in Sal. Sac. 1711.

9. Similar traditionary statement; with the addition that a copper-plate grant was lost in the times of disturbance.

10. A like statement; the last particular being excepted.

11. Some traditional details by an individual as to his ancestor's lands. Documents were lost in the disturbances occasioned by Hyder Ali.

12. Similar traditionary matter.

13. Dated in Sal. Sac. 1637. Gift of an *agrahāram* to a *Brahman* by *Yāchama-nayadu* of *Vencatagiri.*

14. No. no date. Gift of an *agrahâram* to a *Brahman.*

15. Dated in Sal. Sac. 1736. Gift of a village, the title deeds of which were lost in times of war and disturbance.

16. Dated in Sal. Sac. 1628. Gift by a chief of the *Vellugotiváru*-race; the title deeds were burnt, with the house in which they were kept.

17. Dated in S. S. 1636. Gift of a village by one of the *Vellugotiváru*-race. The title deeds were lost in times of disturbance.

18. Traditional account of a grant by the same chief. The title deeds were lost, in times of trouble.

19. A like statement.

20. Dated in Sal. Sac. 1618. Gift of a village by one of the *Vellugotivaru*-race. It was divided into two portions, among several *Brahmans,* whose tribes are specified.

21. Dated in Sal. Sac. 1560. Gift of a village. Some letters of the inscription are noted as no longer legible.

22. A matter of detail, connected with the rule of the *Vellugotiváru*-race.

23. Dated in Sal. Sac. 1670. Commemorating similar matters of revenue; relative to the same rule.

24. A grant authorizing an individual who is named to receive 24 Pagodas, from a ruler at Cuddapah.

25. Relates to the grant of an annual allowance to several individuals from rulers of the *Vellugotiváru*-race.

26. An agreement of some traders to pay a tax on proceeds: in order to build an *agrahâram.*

27. Gift of a small village to a *Brahman.*

28. Dated in Sal. Sac. 1679. A grant of a piece of land to a *Brahman,* from *Yāchama-nāyadu.*

29. Dated in Sal. Sac. 1670. Details of an *agrahārum* given by *Pedda-Yāchama-nāyadu.*

30. Dated in Sal. Sac. 1631. It commemorates a trifling gift to an *agrahāram,* by *Cumara-Yachama nayadu.*

31. Dated in Sal. Sac. 1673. It relates to a small grant in free tenure.

32. Commemorates a small gift of land by an Officer of the Court.

33. Dated in Sal Sac. 1638. Gift of a village by one of the *Vellugotivāru*-race,

34. Dated in S. S. 1717. The subject is the gift of a village to supply oil for a temple.

35. Dated in Sal. Sac. 1710. Records a gift of land in free tenure to a *Brahman.*

The remaining contents of this book, containing in all 70 particulars having been read over with care, are found to offer nothing more important than the preceding portion of the book, which will be observed to be chiefly of late dates, and entirely of small consequence. The whole contents of the book are of the like kind: with a very trifling exception, as to the principality of *Vencatagiri,* and the rule of the *Vellugotivāru;* concerning which race sufficient details have otherwise been given.

Adverting now generally to this subdivision (E) on Miscellaneous Inscriptions, it may be perhaps readily believed, that it caused greater trouble and expense than more voluminous portions of these papers. The reason is, there was

much appearance of fruit; and the paucity of the result, though matter of regret in itself, is yet of consequence to be known, in estimating the Mackenzie Manuscripts: a most valuable portion of which was supposed to be the Inscriptions, or copies of Inscriptions, therein contained.

Madras, 10*th* *August* 1844. W. TAYLOR.

*** *The work, herein reported, was done in* 1838.

III.—*Translation and Analysis of the ancient documents engraved on copper in possession of the Syrian Christians and Jews of Malabar. By the Rev. H. Gundert.*

As it does not seem that the Jewish and Syrian documents preserved in Cochin and Cottayam have been sufficiently made use of for the purpose of elucidating the ancient history of this coast, any endeavour to set their contents before the learned public may surely command some attention. But there is good reason to expect that the discovery of an intimate connexion between the contents of the several documents settling the doubts about the existence of Jewish and Christian principalities in the Malayalam country will call forth a new and more diligent investigation than has ever been bestowed on these valuable records.

The Syrian tables for an insight and fac-simile of which I am indebted to the kindness of the Rev. Mr. Baily at Cottayam, are

I. A long and broad copper instrument written on both sides with old Tamil letters mixed with a good deal of Grantham or modern Malayalam letters. This being by far the easiest I shall copy and explain in the first place. It is a grant of the Perumál Víra Rághava to Iravi Corttan of Codungalur, making over to him the little principality, Manigrámam and elevating him to the position of sovereign merchant of Kerala.

II. The other Syrian document consists of five copper-sheets, of much smaller size with seven pages Tamil-Malayalam, apparently written by different hands, the letters less distinct and in some places injured by the breaking of the plates and corrosion, and two pages, written in two unknown languages (Kufic) with four Hebrew signatures. It is an act by which one Maruwán Sapír Isó (the Shapur or Xabro of the Syrians ?) transfers a piece of ground near the sea shore, with several families of different Heathen casts to a community and church, Tarisápalli, built by one Isó dáta virái, the grant being made with the Palace Major's sanction (probably the Commissioner of Perumál Sthánu Ravi Gupta) and with the concurrence of the Vénádu (Travancore) king, Anjuwannam and Manigramam that is the Jewish and Christian dynasties, being appointed joint protectors of the land and the Church endowed. No princes are mentioned as witnesses, except the heir of the Travancore and the neighbouring Lords. In consequence I suppose this tenure inferior to the first and third,—Manigramam and Anjuwannum were held directly under the Perumál, this church-land under the provincial authorities.

III. The Jewish tables, two with three pages in Malayalam-Tamil are preserved in Cochin at present by a Rabbi Samuel who also shows the old Hebrew translation and permitted me to copy it. It is the best preserved, tho' certainly oldest of the three documents, the language with the exception of one word

—uniform Tamil, the writing more regular than that of the others. It contains a grant of Anjuwannam, the principality just mentioned, to Joseph Rabban, given by the Perumál Bháskara Ravi Varmá and attested by the chief Raja's of Kerala.

Here follows the document I. representing literally its Tamil characters in modern Tamil, the Grantham in the present Mallayalam Alpbabet.

pl. lin. (1) സ്വസ്തിശ്രീ മഹാഗണപതയെനമഃ ശ്രീ ഭൂവാലനരവതി ശ്രീവീരകേരള (2) ശക്രവ ൎത്തികൾആദിയായി முறமுறையெ பலநூறுயிரததாண டு (3) செஙகொல நடததாயிநின்ற ശ്രീവീരരാഘവ ശക്രവ ൎത്തികൾക്കു തിരു വിരാ (4) ജ്യം ചെല്ലാ யிநி ன்ற மகரததுள்வியாழம மீனஞாயறு இருபததொனறு (5) சென்ற சனிரொவஹணிநாள் பெருஙகொயிலகததி ருநதருள மகொதையர் படடிண (6) ததுஇரவிகொர்த தனஞயசெரமான் லொகபபெருஞ் செடடிககுமணிககி ராம (7) படடஙகுடுததொம்—விளாவாடையும பவனத தாஙகும் வெ? பெறுமகடுதது (8) வளெஞசியமு (ம் wanted) வளஞ்சியததிலதணிசசெடடும் முறசசொலலும முனன (9)டையும വഞ്ചവാദ്യം ശംഖം വകൽവി ളക്കും பாவாட்டயும ഹൈമന്താളും கொறற (10) ககுடயும வடுகபபறையும இடுபடி தொரணமும் நாலு செரிககும் தணி (ii. 1.) சசெடடும் குடுததொம் —வா ணியரும ഹൈമംകൂറാ ളും ശേഷം ൎത്തിമക്കൂളും ഞ്ഞം— (2) நகரததுககு கர்ததாவாய ളരവിചെ ചാഞ്ഞ നൽ பறகொ ணு ளநநு நிறகொண (3) டுதூககிநூல் கொணடுபொகி எண்ணினறதிலும எடுககினறதிலும உவி

(4) ஞெடு ഗ്രാമത്തൊട്ടുകൂന്നിയൊട്ടുവി ഉകെ
ണ്ണൊയൊട്ടുഉടട്ടിൽ உளளதளபபெர் (5)பபடடதிஞும
தரகுமஅதிணடுதத சஙகமும கூடடகொடுஙகூளூர் அழிவி
(6) யொடுகொபுரததொடுவ്വെ ഷാൽ நாலுதளியும்
தளிககடுதத கிராமததொடிட (7) யில் நீர்முதலாயிசெப
பெடு எழுதி குடுததொம்—செரமான் லொகப்பெருஞ
செ (8) டடியான இரவிகொற്റന്നു இவன் மககள்
மககள் ഴെ വഴിവഴിയെ വെറാക്കൊട്ടു (9) ത്താം-
இதறியும் பன்றியூர் கிராமமு (ம் wanted) சொகிரக
கிராமமும் அறியககுடுததொம்—வெ (10) ணாடும் ஓடு
நாடுமறியககுடுததொம்—ஏறுநாடும வளளுவநாடுமறி
யககுடுததொம ഉരു (11) ഖ്യു களுள்ள നാളെ
ക്കൊട്ടുത്താം—இவர்களறிய செபபெடெழுதிய செர
மான் லொகபபெருந் தட (12) டான் നമ്പിചടെ
യൻ കൈയെഴുത്തു.

Translation: Pl. i.

Hari Srí Adoration to Ganapati. 1

The blessed rule having devolved from the earth-ruler 2
Manlord Chacravarti Víra Kérala (the first of the line) thro' regular succession upon Srí Víra Rághava Chacravarti, 3
now wielding the sceptre for many 100,000 years (in the year) Jupiter in Capricornus, the 21st of the Mína month, 4
Saturday, Róhani asterism, the following grant was made 5
in the Royal palace (of the Perumál)—We have given to Iravi Corttan of Mahódéverpattnam, (henceforth to be called 6
Grand Merchant of the Chéramán world (Kérala), the 7
Lordship of Manigrámam. We also have given to him (the right of) the feast-cloth (?) house pillars (or pictured rooms?) 8
all the revenue, the curved sword (or dagger) and in (or

with) the sword the sovereign merchantship, the right of
proclamation, the privilege of having forerunners, the five 9
musical instruments, the conch, the light (or torch burning)
by day, the spreading cloth, litter, Royal umbrella, Vaduca
drum (drum of the Telugu's or of Bhairava ?) the gateway 10
with seats and ornamental arches, and the sovereign mer- Pl. ii. 1
chantship over the four classes (or streets)—also the oilmakers
and the five kinds of artificers we have subjected to him (or
given as slaves to him)—We have given as eternal (liter- 2
ally "water"—) possession to Iravi Corttan the lord of the
town, the brokerage and due customs of all that may be mea-
sured by the para, weighed by the balance, stretched by 3
the line, of all that may be counted or carried, contained
within salt, sugar, musk, and lamp oil, or whatever it be— 4
namely within the river-mouth of Codungalur and the 5
tower, or between the four Talis (temples of the deputy Brah- 6
mans) and the Gramams belonging to them—We have 7
given it by an unreserved tenure to Iravi Corttan Grand 8
Merchant of the Chéramán world and to his sons and son's
sons in proper successsion.

Witnesses are:—

With the knowledge of the two, 9
Brahman divisions of Panniyúr and Chowaram village have
we given it; with the knowledge of the Vénádu and 10
Ódunádu (rulers) have we given it; with the knowledge of
the Eránádu and Valluwa nádu (rulers) have we given it;
given for the time that sun and moon shall last; with 11
the knowledge of the above, written by Nambi Chaḍayan 12
grand goldsmsth of the Chéramán world.

Remarks.

1. The term Chacravarti I take for a translation of the common Malayalam appellation, Perumál (grand per-

son) signifying the head of the whole Kérala. The present Malayalam tradition agrees with the document in making a Kérala (or Kéya) the first of the Perumáls. Víra Kérala is still the hereditary name of the Cochin Rajas, whom the old Jewish translation of III makes to be the descendants of the Perumáls.

Iravi Corttan must be a Nasráni name though none of the Syrian priests whom I saw could explain it or had ever heard of it. Is it to be brought in connexion with the Baliartes of the Portuguese?

5. Mahódéver patnam, the old name of Coḍunrílúr, generally Coḍungalur,* (probably from S. *Mahas,* worship, feast). The traditions of Jews, Christians, Brahmans and of the Kérala Ulpatti agree in making Codungalur the residence of the Perumáls and the first resort of the western shipping. The place is identified with the Tiruwanjiculam river-harbour† which one Chéramán Perumál is said to have declared the best of the existing 18 harbours of Kerala, from whence also he is said to have sailed for Arabia. The Kérala Mahatmyan, a Sanscrit work chiefly devoted to the praises of Colattiri‡ and Travancore, though it makes mention of nearly all the residences of the Malabar Rajas, knows nothing of the Royal glory of the town, which it calls Sri Kótara puri, and extols as being rich in bazars filled with all sorts of merchandize and famous for the great Bharani festival of Bhadra Cali celebrated with the greatest profusion. I conclude from this connected with the silence of I and III that the Colattiri was on the whole jealous of the Perumáls, and at least in the time of these documents independent of him.

There is at present a Raja at Codungalur one of the five

* Cranganore.
† Lat. 10° 13' N.
‡ Cherical.
Eds.

Cshatriya families mentioned in the Kerala Ulpatti (p. 51 പടിഞ്ഞാറെടം "western court") now a feudatory of the Cochi or Perimpadappu Raja. May the Musiris of the ancients not be sought here? (see the Muyiri-codu of III.)

7. Manigramam. I no where met with a recollection of this name, until I fell in with the South Indian Repository of April 1838. There, a Syrian tradition relates (p. 192) that the Syrian Christians sorely tried by a heathen conjurer (the poet Mánica Váchakar?) at last divided into 2 parties, one of 96 families who submitted to heathen purification and adopted the conjurers tenets, whence they were called Manigramacar, whilst the other party, consisting at last of only 8 families, stood fast and were called Confessors, Dareaygul, [in the original probably தரியைகள்]. Possibly this last name may be found in the next document. So much is sure that Manigramacar could only be the name of the relations and connexions of Iravi Corttan, or of that Christian section which by its commerce and riches acquired the peculiar favour of the Perumals. May not the tradition give a witness to a certain amount of christian principle within the Syrian Church of those days, showing that not all Christians were blinded by the splendour of the Royal gift, because the elevation of a Christian merchant to the rank of prince in Kerala could hardly take place without a dangerous compromise?

8. 10. The signification of several of these princely or jenmi privileges, (called in III. வீடுபெறு) is doubtful. The four classes or streets (4 செரி) I take for classes of foreign merchants, living perhaps in different quarters of the town, such as Concanese, Guzarattis, Chinese (mentioned in the Kerala Ulpatti) and Arabs or Jews. The mention made of the oilmaker, and five artificers (goldsmith, carpenter, founder, ironsmiths coppersmith) together with the Ilawar of the next Document,

recalls some of the confused traditions, touched upon by Wilford, of the introduction of Simhalese castes by the Christians. Several Kerala Ulpattis say, the five Artificers emigrated once after having provoked the Perumal's wrath, and found refuge in Ceylon, from whence they were brought back by the intercession of foreigners, and in their train the cast of Cocoanut tree cultivators [called Ilawar i. e. "Simhalese" from Ilam—Síhalam in Pali; also Tíyar or Dwípar, "Islanders" and Chokar i. e. Sévakar "servants."] One Kerala Ulpatti of the Nasranis says, that their forefathers with the help of these Simhalese peasants built Codungalur, as may be learned from the granite inscription at the Northern entrance of the Tiruvanjiculam temple. Farther investigations on the spot are certainly desirable.

ii, 2. "waterpossession." Every freehold or jenmam is given with the ceremony of pouring water with some flowers strewed upon it, into the hands of him who by drinking it, brings the property designed, into contact with his body. This property may either consist in grounds or in hereditary rights, [here the power of Sovereign commerce and rule over some castes.] From a comparison of the 3 Documents with each other it will appear that the landed property of the Jewish and Christian princes was the least part of their princely power. As the Perumal could not lower himself to deal with strangers, being only accessible to the nobility or the jenmis of the land, the necessary consequence of a thriving intercourse with western shores and of a more or less stationary residence of foreign merchants was this, that this newly forming power within the state should be recognized and brought in harmony with the old institutions by the elevation of a responsible head Merchant to the rank of a Jenmi and hereditary crown dignitary. This was effected by making him Prince over a small territory. The Syrians and Jews may have had great landed possessions on inferior tenures; but not the ex-

tent of the ground,—the deed of a freehold only would make them presentable. The Dignitary thus created was then made protector of his tribe and probably patron of some of the lower heathen castes connected with him by the interests of trade, (oilmakers, cultivators, manufacturers ?) his jurisdiction and political authority thus extending all over the Perumal's territory. Hence the Jewish Emir of whom the Arabian merchants relate. Upon the breaking up of the Perumal's empire, each Lord of a province seized what was within his borders, whereby the power of Manigramam and Anjuwannam could not but be reduced to a minimum. But the Rajas continued the former custom of encouraging commerce by the elevation of one foreign family to princely rank. The Calicut Raja as it were in opposition to his old rival of Cochin, encouraged the Arab settlers as the other did the Christians, and pushed his conquests towards the South chiefly by the aid of his chief Merchant and Admiral the Cóya or Cósa, the head of the Musselman settlers. The case of the Bibi or Ali Rájah of Cannanore (*ăli*, i. e. "sea") once a vassal of Collatiri for whom he conquered and from whom he held the Laccadives, seems to be likewise analogous. See both the Cóya and Ali Rajah mentioned in the list of princes, Ker. Ulp. p. 52.

6. "the 4 Tali." This incidental information about the four Talis near Codungalur gives confirmation to an important feature of the old Malayalam government, as described in the Ker. Ulp. p. 11. It is there stated that the Brahmans fearful of the encroachment of the Perumals renewed a former division of their 64 colonies (grámas) into 4 circles, represented by the four chief villages, and these had four Talis or temples for the sittings of their Representatives constructed near to the Perumal's palace. Their names: Méttali, Kíltali, Nedia Tali, and Chingapura tali. Every government measure had first to be discussed and approved by the members of this

Parliament, called Taliyátiris. There is still a temple Sringapuram, near the Cshatria palace of Codungalur. Chingapura is perhaps a *tadbhavam* or corruption of Sringapuram (not of Simhapuram)

8. Iravi Corttan's inheritance goes to his sons. The Máhomedan settlers of a later period had to adopt the custom of the country, that of making their nephews their heirs. Probably this custom would not have prevailed with the Mahomedans, had not the example been first set by their chief family, who could have submitted to it only for commensurate advantages.

9. Panniyur ["boar's village" from the Varáháwatára worship] and Chówaram [Siva-puram] are the two Brahmin colonies which give name to the present faint distinction of Veishnawas and Sheivas. Every Brahmin or other high caste man is known to belong either to the Panniyúr cúru or Chowaran cúru, though few are acquainted with the points that distinguish the one from the other [except it relate to the different modes of dressing victuals.]

10. Vénádu is Travancore. Ónádu [here Ódunádu] the neighbouring province with the capital Cáyanculam.—Eránádu is the original province of the Támútiri or Samorin and his neighbours were the 'Arngóttu dynasty in Walluwa nádu, with the Olympia of old Kerala, the temple of Tirunávái, on an island on the Ponani river. The two latter are always mentioned together. In the Ker. Ulp. the last Perumal gives to the one (Erádi) his sword, to the other (Vallódi i.e. Valluwa-adi) his shield and orders them to live always in peace with each other, a command which the Samorin soon broke by supplanting the Valluwa ruler in the right of superintending the great national feast [Mahamakham] at Tirunávái—That whole part of the Ker. Ulp. in which the present dynasties of Malayalam are represented as dating their origin from the last

Perumal's distribution of the country, is fully disproved by this and the Jewish document, and the relation of the Kerala Mahatmyam, according to which the several families were placed here and there by Parasu Rama, for the purpose of protecting certain temples and Brahmin villages, comes much nearer to the truth, if we understand by Parasu Rama the old time of Brahminical rule.

12. "Chéramán world," occurs here twice for Kérala. Surely there has never been an individual Chéramán Perumál, tho' his name is in every mouth on this coast. Chéramán is the name of the whole dynasty of Chéra or Kérala rulers, for these two names are the same, Kérala being only the Canarese pronunciation, as appears from the Deccan inscriptions of W. Elliot Esq. in which no Chéra is associated with Pándya and Chóla, but only a Kérala.

The most correct representation of the country ruled by the Perumáls is then, that of a feudal state with a powerful hierarchy close to the person of the King and deeply rooted in each province through richly endowed colonies. Then four or more eminent vassals, say two in the South, two in the North, and lastly a number of other princes and hereditary dignities with sounding names and minutely defined privileges, all having crown offices such as those of the writer and of the subject of the document. The influence acquired under such a government by Colonists from the West in spite of their different religions and of the standing threats of the Brahmins that the country is destined to be once more overrun by Sacas, Mlétchas and Bauddhas, can only be ascribed to its incapability of cultivating commerce and relations with other nations, except by encouraging the private exertions of a more spirited community of foreigners.

II. DOCUMENT.

a. I. pl. i. സ്വസ്തി—കൊസ്താണു இரவிகுத்தன்பலநூறு
ரத்தாண்டும் மற்றொன்று (1)சசிறந்தடிபபடுததாளாநின்
யாணடுள்சசெலலா நினற (2) யாண்டைநது இவவாண
வெணுடுவாழ்கினற அயயனடிகடிருவடியு ம் (3) திகா
ரும் பிரகிருதியும (follow signatures apparently engrave
over other letters, without a break in the sentence) மைடு
வணணமும் புணனைதத (4) லெபபதியும முன்வைதத
குரகெணி கொலலதது റഡറ ശൊദാക விராயிசெ (
யவிததருஸாப்பளளிககு செயயனடிகடிருவடி குடு
b. தவிடு பெருவது (6) —நாஙகுடி ஈழவரும மககுடி
கெறு மிழககைய ரொண்மரும் இவ (ர் wanted as often)
ள் வநநி (or நீ) (7) ரூபமொரு வணணார் குடியும்
வவனெவர்கருந் தளைககாணமும் மெணிககாணமும (
ரனைமெய்பபான் கொளளுமிறையுஞ் சான்றுன் மாட
மெரிபொன்னும பொலிபபொனனு (9) ம மிரவுசொ
ங கொளளப்பெற்றர் வாரககொலுங (the last 2 letters su-
plied from pl. iv. v,) கவவ (or ப்ப) ரனும்வைஞசக (10)
ண்டியும் முனனம் பெறறுடையன் நானுமவீடு (11) ெ
ருக அடடிககுடுததேன்—இநநாஙகுடி ஈழவருமபெ
c. ருகுடிவணணாரு (12)(ம் wanted) இரணடுகுடி—(perhaps
pl. ii. நீருடி or விருவி) யரும ஒ (or இ)ரு குடிதசசருமளை
(or வை) யபூமிப்கரு கா (13) ராழர் ஞங்குடி வெளள
ளரும இவவனைவரு (ம்) தெவர்கருநடுவன்ந (14) ட
இடுவன் இடடுபளளிகரு எணணைககும மறறுமவெ (1
ணடுஞ்சடஙகு (one or 2 கு seem to be wanting) றவுவார
தெய் செயயககடவராக சமைசச் இ (16) நநகரமகண
நீரொறற மருவான் സവിസ്ഥൊദാ செய்விசசு ரா

(17) ஸா ப்பள்ளிககுககுடுதத (ഭൂമി) யாவது—கொயி
லதிகாரிகள வியராக (or ச) (18) தெவர் உட்பட இருநத
ருளி பபிடிநடததி நீர்ததுளளியொடுகூ (19) ட அயயன
டிகள் திருவடியும் இளஙகூறுவாழின்ற രാമ திரு (20) வ
டியும் அதிகாரருமமூத்ரியும அறுநூறறுவருமபுனனை
ததலை (21) பபதியுமபூனைககுடிபபதியும உள்பபடவசசு
இபபூமிக (22) கெலலை-கிழககு வயலகாட்டே யெலலையாக
வுங்-காயிலுமுட்பட தெதென (23) கிழககு சிறுவாதில்கக
ல்மதிலெ யெலலையாகவும - படிஞஞாய (24) று கடலெ
யெலலையாகவும - வடககுத தொரணததொட்டமெயெ
லலையா (25) கவும - வடகிழககுப்புனனைததலை அணடில
iii. ன்தொடடமெ யெலலையாகவு (26) ம இநநான்கெலலைக
கும அகபபட்ட (ഭൂമി) பிடிநடததி உலகும்சநதிரா (27)
திததியரும ஔளநாளெலலாஞ் செபபுபததிரஞ்செயது
குடுததென—அயயன (28) டிகள்திருவடியும் இராமதிரு
வடியுங் கொயிலதிகாரிகளுளும் பட (evidently mistake of
the writer for ளுமுள்பட) மை (29) (or வ) ததருளி இப
பூமியில குடிகளயும எபபிழை சொலலியும பளளியா
ரெ (30) ய் (or ளாய?) பிழையுமழிவும தலைவிலையும முலை
விலை யும பளளியாரொ கொளளபபெறுவா (31) ர்—நந்த
மர் எபபெர் பட்டாரும எபபிழைசொலலியும பூமிதத
லையும (32) குடிகளபாடுஞ் சொலலபபெறூர் - அறுநூ
றறுவரும அஞசுவணணமும் மணி (33) ககிராமமும இர
க்ஷிககககடவர் — பளளியையும் (ഭൂമി) யையும உலகு
(34) ம சநதிராதிததியரும் ஔளநாளெலலாஞ் செபபுப
ததிரததில (35) பபடடவணணஞ்செயதுகொளளககடவ
ர்அஞசுவணணமும் பணிககிரா (36) முமம—இவ(ர்)கள்க

ருககொயிலதிகாரிகள வியராக(ச?)தெவருள்பபடட இ
(37) ருநதருளிஅயயன டிகளதிருவடியும இராமதிருவடி
iv. யுமஉட்பட இ (38) ருநதருளி (follow signatures as in pl. i.)
இவ (ர்) கள்ககுககுடுதத (39) வீடு பெறுவது அறுபதி
ஞென்றுலகுங் கள்வ (or ப) ரததிலுல கிலலை யாகவும
அழிவு (40) லகிலலை யாகவும — இவ (ர்) கள் கொள
ளும அடிமைககு ஆள்காசு கொளளப பெறுரா (41)
கவும — வாயிணம வருமதில வரததிலும் பொககிலும
எடடுககாசு கொளளககடவ (42) ராகவும—பெடியிலும
படகிலும பொககிலும வரததிலுநநாலுகாசு கொளள
(43) ககடவராகவும-உலகு படுஞசரககு இவ(ர்) களைகூ
டவசசு உலகுவிடுபபதாகவு (44) ம-சரககு மிலையிடுமிட
த்துமமறறுமெ ஙா மிகாரியம எககாரியமுமஇவ (45)
(ர்) களைககூடடியெசெய்வதாகவும-அணறணறு படுமூல
கு அஞசுவண்ணமும (46) மணிக்கிராமமும இலசசிசசு
வைபபதாகவும்-நாலுவாதிலகதது (47) ம்வில (or ல்) ககும
பூமியாககாராண்மைகொடுககுமெடடததுஙகொப்பதவா
ரங (48) கொயில்கொணடு பதிபபதவாரம் அஞசுவண்ண
மும் மணிககிராமவு (49) ங் கொள்வதாக—இவ (ர்) கள
ககு மங்கலததுககு ஆனைமேல் மணணுநீர்மூத (50) லாக
எழுபததிரண்டு வீடுபெறும வசசுககுடுததார். கொயில
தி (51) காரிகள வியராகதெவர்உள்பபடஇருநதருளி அய
யனடி (52) கள் திருவடியும்ராமதிருவடியும் [illegible]யும்
v. அதி (53) காரரும் அறுநூற்றுவரும் புன்னைததலைபபதியு
ம் பூளைககுடிப்ப (54) தியும் உளபபடவைதது உலகும
சநதிராதித்தியரும் ஒள்ளநாளெலலா (55) ம இவவடடிப
பெறெலலாஞ் செபபுபததிரததில படடவணணஞ் செய
து (56) கொளளபெறுவர். அஞசுவணணமும்மணிககிரா

l. மமுமம—இவ (ர்) கள்கககு (57) அனனியாயம ஒணடா
யில் உலகுதுலாககூலி தடுததுந்தங்கள் அஞுஞாயந்திர்
(58) தது கொளளககடவர்—தஙகள் செயயும பிழையுண
டாகிற்றஙகளைககொணடெயாராஞ்ஞு (59) கொளள கக
m. டவராகவும—இநநகரததுககு கா ராளராக நீரொறருர்
அஞுசுவணணமு (60) ம் மணிக கிராமமும இவருளிரண
டுதலையாருங் கூடிச செயவ தெயக (61) ருமமாகவும—
n. இநநகரங்கணடு நீரொறறவருமான் സവീരിശോ மு
ன்னமபளளி (62) யார் பெறறுடைய வாரக்கொலுவவஞு
சகணடியுமமறைவான സവീരിശോ பெ (63) றுத
து நிறைககூலிபளளிககுககுடுககககடவர்—இதுவும அட
o. டிப (64) பெருககககுடுததென—உலகுஞசநதிராதிததிய
pl. vi. ருமம ஒளளநாளெலலாம (65) மெவவகைபபடட இறைய
ந்தரிஸா பபளளியார்ககுவீடு (66) பெருக செபபுபபத
p. திரஞ்செய்தடடிககுடுததென—இ (67) வவிழவர் தமப
(or வ) ணடி குணநதஙகாடியிலும மதிலிலும வியாபரிக
கபபெறுவர்—வணண (68) ஞுமவநதஙகாடியிலுமமதிலி
q. லும வநது தன்பணி (69) செயதுகொளளப்பெறுந்—
தீயவாள்வாணும மதிஞயகணும மற (70) றுமமெவவகை
பபடடாருமமெபபிழைசொலலியுமமிவ (ர்) (71) களைத
தடுமாறுபபெறுர்—இவ (ர்) களைபபிழை செயயிலும
(72) பளளியாரொய் ஆராநது கொளளபபெறுவர்—உல
குஞ்சநதிராதிததருமம உளளநாளெலலாம செபபுபபத
திரததிலபடடபரிதுவீடுபெறு அடடிபபெருக அடடிக
r. குடுததென—இபபரிது வீடுபெறு அடடிபபெருக அய
pl. vii. யனடிகடிருவடியால தரிஸாபளளிககு அடடுவிடுததுககு
s. டுததானமருவானസവീരിശോ—இதுகாததில (ச்சி

t. is wanted) கஙிலகெஙிககும் மவர்ககுதெவனாயனுககிரா மனு செயவாராக—அயனெழுதது—வெளகுலசுநதரனு ககு மொககும—விசைய

The following is the translation as far as it can be made out with short remarks in brackets.

a. Hail !—In the time (literally, year) of Perumál (Có king, or Gó—) Sthánu Ravi Gupta, who now rules gloriously for many 100, 000 years, treading under foot hostile heads, in his 5th year, this year under the concurrence of His Excellence the Ayyan-Adigal, governing the Vénâdu (the Travancore King is still called Vénád adigal "the adorable feet of Vénádu") of Anjuwannam (the Jewish principality, of the following grant) and of * Punnattala's Lord (the next neighbour, vide *d.*,) the following grant of a freehold has been given by H. E. the Ayyan Adigal to the Tarisá Church (and Community) established (or built) by Isodáta Virái of Curakkéni Collam.—(The name Tarisá is perhaps to be recognized in the Dariaygal of the Syrian tradition. I. pl. i. Remark. 7.)

b. (This sentence is the most difficult of the whole—first on account of the many antiquated terms of country customs, secondly on account of the construction, பெறார் *perár* being the negative verb as p. iii. and p. vi, which gives no plausible translation. I prefer to read பேறார் *pérár* and take it as the Nominative for the Genative :) and I also (one of the above Lords or Maruwán Sapír Ísó or the Church, vide *n.*, who formerly had the possession of the share-staff (வாரகொல feudal tenure ?) of the four families of Ílawar ("Simhalese, also Tíyar, Dwípar, Islanders" now Palmtree cultivators) and of the eight families of Ílakeyar (Síhala low casts or slaves?) belonging to them, and one family of washermen coming from the

* Punnattala is said to be near Mavalicara.

same stock as these, all these being entitled to the fetter-right (தளை the footrope for mounting cocoanut trees ?) and ladder right (for reaping pepper ?); to the tax for the elephant feeder, and to the wash-gold (" *eri*" perhaps—*ari*,) which the Chàndàn (" great person ? sun ?") is wont to get (*máttu* " hook in" T. " get by ruse" M.) as well as to the harvest gold (" *polipon*" gold of interest ? shining gold ?) to the nightly meal of rice and to the pot-measure, I, possessed of this sharestaff and of the Cavván (or *cappam* ? " tribute") and of those 5 Kandis (pieces of ground or shares ?),—have given them by a free and unrestricted transfer.

c. Maruwán Sapír I'só (Maruwán the syrian מרן Lord ?) who has received the water (hereditary possession) of this town, having arranged that these four families of 'Ilawar (with their servants and washerman), two families of—, one family of carpenters, and four families of Velláler (Tamil agriculturists) the latter being Cárálar (T. ploughmen, M. temple servants used pl. v. for Trustees, hence pl. iv. the noun *cáránmei* " Trusteeship") of the Alavé (or *Aladeiya*) land, that all these may do their duty to the God, the planter by planting (rice etc), the setter by setting (trees, or by building, offering ?) so that the required ceremonies such as the oil for the Church suffer no diminution, has enacted and given to the Tarisá Church the land now to be described.

d. Decreed with the sanction of the Palacemajor* Vyaráka Dévar (probably commissioner of the Perumal, since he is repeatedly mentioned before the Travancore vassal) and power given with (the ceremony of) waterdrops for seizing and possessing, under the concurrence of H. E. the Ayyan adigal, H. E. the second Raja—Ráma (brother of the former and next heir,) his officers and ministers, and of the 600 (a local authority vide *f*,) also of the (neighbouring) lords of Punnattala (" place of Calophyllum trees") and Púlacudi

* In the original கொயிலதிகாரிகள் Eds.

(" dwelling of silk cotton trees")—the Land bounded so that the E. border be Vayalcádu (open waste plain,)—and the backwater included; the S. E. border be the wall near the little door gate ? (*Chiru wátil cál matil*) ; the W. border the sea ; the N. border the Tórana garden ; the N. E. border the garden of the unapproachable (*andilan*) of Punnattala ; the land enclosed within these four borders I have empowered to take and by executing this copper deed have given, for the days that earth, moon and sun exist.

e. And it has farther been settled with the concurrence of H. E. the Ayyan Adigal, H. E. Rama, and the Palace Major —that the Church people (Palliyár—probably heads of the Tarisá citizens) alone have power to punish the (heathen) families of this land for any offence whatsoever and receive the fines expences, headprice and breastprice (probably the right of selling males and females for serious caste offences ;)—mine
f. own relations whoever they be, whatever the charges be, shall never have the right there to speak as heads of the land dealing with subjects—Let the 600 (see *d*) the Anjuwannam and Manigramam (Jewish and Christian principalities)
g. be the protectors. Let them, even Anjuwannam and Manigramam act both with the Church and the Land according to the manner detailed in this copper deed for the times
h. that earth, moon and sun exist. Ordered with the sanction of the Palace major Vyaráka Dévar, and with the sanction of H. E. the Ayyan Adigal, and H. E. Rama and free tenure granted to these (Palliyar) as follows :

i. (Again a difficult sentence—I take *ulaku* i. e. lóka for the official name of the citizens, Christian freemen, formed into a corporation, and distinguished both from the Palliyar, who are their headmen and from the Cudi or Heathen families, who live on their grounds as farmers or slaves)—There being 61 citizens, the number not to be increased nor to be dimi-

nished; no personal tax to be received for the slaves they buy (or, " the person-tax to be received" if you read pérár); —for admitting any conveyances or letting them out they are to receive 8 coins (káchu—*wáyinam* is váhanam, understand horses, waggons); in the case of (female) elephants and of boats whether for letting in or letting out they are to receive 4 coins; merchandize belonging to the citizens to be disposed of (or removed) by them with the cognizance of the above (the Palliyár ? or the protecting Lords ?); and that they (the Palliyar) do all the business (rights and duties) of a Lord (Swámi), on the place of packing the wares (or on spots where poles with leaves are set up as signs of prohibition) and elsewhere, only after deliberation with the above mentioned (Anjuwannam and Manigramam ?); that Anjuwannam and Manigramam protect the citizens in every coming generation; that in the space within the four gates (or in the four public offices ?) and on the spot where land for sale (or " under prohibition") is given in trust, the Palace (or Supreme Government) having received the King's tithe (Kó-pata-wáram), Anjuwannam and Manigrámam receive the Lord's tithe (Pati-ppata-wáram) with the sanction of the Palace

k. Major Vyaraka Devar, who has given to these (the Palliyár) the 72 jenmi rights (*viduperu*) such as for marriages (or processions) the elephant's back, the earth, the water etc (or " earth and water on the elephant,"—at all events marks of nobility), and with the concurrence of H. E. the Ayyan Adigal, H. E. Rama, the ministers and officers, the 600 and the Lords of Punnatala and Púlacudi, let Anjuwannam and Manigramam carry out this unrestricted possession-right in the manner described by this copper deed for the time that earth, moon and sun exist.

l. If any injustice be done to these (the Palliyar ? or Anjuwannam and Manigramam ?) they may withhold the tribute (" world-bearing-hire") and remedy themselves the injury

done to them. Should they themselves commit a crime, they are themselves to have the investigation of it. And
m. let whatever the two chieftains in Anjuwannam and Manigramam who have taken the water (possession) as trustees for this town (*Cáráler,* see *c.,*) may do in unison be counted
n. for one act – And let Maruwán Sapír Ísó who took the water for this town, since he acquired (or transferred ? *peruttu*) the sharestaff (*Várakól* of *b.*) and those 5 pieces (or *Anjacandi*) which formerly were the property of the Palliyar pay for it the full price to the Church. This also I have
o. given over by unrestricted transfer—I have ceded to the Tarisá Church people by full and unrestricted tenure every kind of revenue by this copper deed for the time that earth moon and sun do last.

p. Those Ilawar are permitted to follow out their occupations (?) in the bazar and on the wall. The washerman may come and do his work in the bazar and
q on the wall. Nor have the Island ruler (or Tíyar-head man) and the Wall-officer or whoever it be, any power to stop them on any charges whatsoever. Though they should commit a trespass the Palliyár alone have to try them.

r I have given this in the manner detailed in the copper-deed for the time that earth, moon, and sun do last by full free and unrestricted tenure.

s The person who made this full, free and unrestricted transfer to the Tarisápalli through H. E. the Ayyan Adigal, is Maruwán Sapír I'só.

t. To those who keep this and care to see it observed let God himself be gracious (what is *anugramam* or *anucrámam ?)* The writing of Ayyan—and may this benefit (*vel*—or is it a compound word?)be equal to Cula Sundara's (Vishnu ?). Rule victoriously !

N. B. This document is the connecting link between the Ist. and the IIIrd. it proves the Jewish and Christian Lords to have been friends and the first Dynasty to have been prior to the other. Although the two remaining pages cannot now be deciphered, it remains for us to add what can be made out of the Hebrew signatures.

הכתובו המוש פריש תהום
——ς——?
התובכו צחק מכיע״ל פריש תהום
—— ς——?
הכתובו אברהם קנובי תהום
הכתובו יבריאה ״ תהום

Much herein is altogether inexplicable, and after we once know that these are signatures of a Hamush, or Hamish (Arab. "courageous,") and an Ishaq Mikaël, Delegates (or Phariseans ?), of an Abraham, who has another office or surname, and of a fourth party, probably all witnesses on Anjuwannam's side, we may leave them for the present. I may add that the late Mr. Buchanan was certainly mistaken in his opinion of these Hebrew characters.* They are very similar to the present Hebrew alphabet and "Abraham" especially can be read on the first view.

III. DOCUMENT.

III. The Jewish document, although the oldest is the best written, the language with one exception [illegible] old Tamil, apparently of a time when the Tamil and Malayalam were still one undivided language, with a few dialectical peculiarities in each province. Though repeatedly copied and referred to since the time of Anquetil du Perron, no translation of it has as yet fully succeeded, because the chief points such as the meaning of Anjuwannam, of *vidu-pêru* etc. could only be satisfactorily settled by the comparison of the Syrian tables. Also in many minor points the comparison of the 3 documents was found to throw sufficient light upon

* Christian Researches p. 140.

what would else remain illegible or doubtful in meaning. The old Hebrew translation is of a time when loose tradition only, guided the interpreter in fixing the meaning of many terms, and when the memory even, of Anjuwannam was already extinguished. No Jew of Cochin seems ever to have heard that name.

pl. i. ஸ்வஸ்தி ஸ்ரீ-கொகொணமைகொணடான் கொ-ஸ்ரீபாற்க
a. ரன இரவிவனமர் பலநூறாயிரததாணடுமசெஙகொல்நட
ததியாளா நினற யாணடு இரணடாமாணடைககெதிர்மு
பபததாறுமாணடு-முயிறிககொடடு இருநதருளிய நாள்
b. பிரஸாதிசசருளியபிரஸாதமாவது-ஈஸ்பபு இறவவானு
ககு அஞசு வணணமும பெடியாலும வாயனததாலும
பாகுடமும அஞசுவணணப பெறும பகல விளககும
pl. ii. பாவாடையும அநதொளகமுமகுடையும—வடுகபபறை
யுமகாகாளமும இடுபடியும தொரணமும தொரணவி
தானமும சரவும மிககும எழுபததிரணடுவீடு பெறும
c. கூடகொடுததொழு—உலகுந் துலாககூலியும விடடொ
ம-மறறும நகரததிலகுடிகள கொயில்ககு இறுககுமறு
இவன இறுமையும பெறுமறுபெறவும ஆகச்செபபெட
d. டொடுமசெயதுகொடுததொம—அஞசுவணணமுடைய
ஈஸ்ஸபபு இறவவானுககும இவன ஸநததிஆண்மககள்க
குமபெணமககளககும இவன்மருமககள்ககும் பெண்ம
ககளைகொணட மருமககளககும ஸநததிபபிரகிரிதி—உல
குஞசநதிரனும உள்ளளவும அஞசுவணணமஸநததிபபிர
கிரிதி—ஸ்ரீ

pl. iii. இபபரி அறிவென வெணாடுடைய கொ
e. வர்ததன மாததாணடன
இபபரி அறிவென வெணுவலிநாடுடைய

கொதைசிரிகணடன
இபபரி அறிவென எருளநாடுடைய மா
ணவெபலமானவீயன
இபபரி அறிவென வளளுவநாடுடை
ய இராயாஞசாததன
இபபரி அறிவென நெடுமபுறையூர்நாடு
டைய கொதை யிரவி
இபபரி அறிவென கீழபபடைநாயகம
செயயினறமூர்ககனசாததன
வன்றலைசசெரிககணடன
குனறபபொழுஞயகீழவாய் } perhaps one person.
ககெளபபாணெழுதது }

Hail! Sri—The King who has taken the Supreme Rule, King (Perumal) Srí Bháskara Ravi Varman, wielding the sceptre and ruling for many 100,000 years, in his time, in the 36th year against the second cycle (literally, year), on the day when he was pleased to sit in Muyiri-códu, he was pleased to grant this favour.

N. B. The Jewish translation particularly incorrect in the rendering of this sentence, deserves perhaps to be listened to in its translation of Muyiri-codu יושבבכנאנור "residing in Cranganur or Codungalur." Perhaps the Musiris of the ancients is to be sought so far South. The calculation of the 36th year against the 2d cycle, which Mr. Whish has attempted, guided by the authority of other documents of considerable age, I am not prepared to criticize, as I am doubtful of the signification of "*etir*" against (before?)

We have given to Joseph Rabban (the principality) Anjuwannam, along with the 72 Jenmi rights such as (going) with elephants and (other) conveyances, tribute from subordinate landholders, and the possession (or revenue) of Anjuwannam, the light by day, the spreading cloth, the litter, the

umbrella, the Vaduca drum (of I. i. 9, Jews transl., "drum beaten with 2 sticks") the trumpet, the gateway with seats, ornamental arches and similar awnings and garlands (*charawu* i. e. T. சரவை) and the rest.

N. B. Here the name of Anjuwannam, has been mistaken by the Jewish and other translators. The Jews translate it in the first place with חמשהמינצבע and further below חמשהצבעים "five colours," and the revenue of Anjuwannam is converted by them into a a right to convert from the 5 castes" ולאירמוחמשה עמות But the language of the Document forbids to take "*anju*" for the numeral 5, it would have been "*aintu*," as in the later Document II. *a.*— The present translation of *vidu-peru*, generally mistaken for a gift of houses, or even for a gift to 72 families (לוולשבאימושנימבתים is) fully secured by Doc. II. in several places: *vidu* (cf II. *k.*,) is the verbal noun of *vidu*, "to leave," signifies "remittance, freedom," hence in ancient T. synonymous with S. *mocsha*, the derived meaning is "freehold, *janmam*," hence the modern signification, "gardens house." Some of the privileges are not quite determined; *pácudam* (T. tribute) is in the Jewish translation, the right of calling from the corners of the street that low castes may retire (וקריאותלמגותהןדף)— after "umbrella," the Jews have inserted וראבל a word of which they do not know the meaning.

e. We have remitted to him the tribute to the Supreme Government (lit. the world-bearing-hire of II. l.

N. B. The Jews translate literally but ungrammatically וב ן-שביתהאגעובאןבימשבירומצת "and the revenue of the land and balances their hires be remitted.")

And we have enacted with this copper deed that when the other Town inhabitants pay taxes to the (Perumals) Palace he shall not have to pay, when they receive, he shall also receive.

N. B. Nothing of the Jewish version can here be of any use they are quite misled by the word *Cóyil*, which they take for Synagogues, and hence conclude the sense to be this "and he shall be

chief to the rest of the Cities in which there are Synagogues and Jewish inhabitants" without any attention to the structure of the sentence. But the sentence is difficult on account of the (antiquated) double *aru*, which I take for "time, term," of Beschi's ஆறவரி "tax paid at fixed times," and the derivative *áru*, used in Malayalam and Canarese for "when." From a comparison of this and the first Document it appears, that the residence of the Jewish and Christian chieftains was not in the little principality given to them, but that they remained in the Metropolis, as the seat of commerce. The Jewish translation may give confirmation to the tradition that there were Jews and Synagogues in many cities, and that naturally enough their naturalized Emir had jurisdiction over the whole nation, which he represented in the system of Government then established.

d. (Given) to Joseph Rabban the owner of Anjuwannam, and to his posterity, sons and daughters, nephews and sons-in-law חתזנבלה a hereditary appendage—for the time that earth and moon exist—Anjuwannam a hereditary appendage—Sri.

N B. *Pracriti* "what is natural, essential to." I take it for synonymous with jenmam, which also first signifies "birth" then in Malayalam "hereditary property." Different is the use of *pracriti* in II. *a.* The Jews translate it here with. קיים "standing" בלזמןשזרצוקייםאלוהגזגרימקיימים

Thus do I know Góvardhana Márttándan, owner of Vénádu (or Travancore, ציגרבובירכין מסארין) Thus do I know Kotei Sri Candan, owner of the Vénaváli province ובזבל (בגרזהגאזזכותרשיל perhaps Bembali, wherein now Cottayam, —may it not be the older name of Odunádu I. pl. ii. 10.)
N. B. These are the two Southern vassals.

f. Thus do I know, Mána Vépala Mána Víyan, owner of Erála province (חירלנאדךמנאבגרין) the name of the Tamutiri, changed by the Jewish version according to the current tradition into Mana Vicrama, vulgo Mana Vikkiran); thus do I

know, Ràyaran Cháttan, owner of Valluwa province)כלורנאר
רבריקשטין

N. B. These are the two northern vassals, as I. Pl. ii. 11.

g. Thus do I know, Cotei Ravi, owner of Nedumpureiyúr district (Jewish version corrupted by the writers, but the tradition that this is the Palacádu Rája seems correct. Nedumpureiyúr is an old temple on the Palgatcheri road, from which Mr. Whish obtained some inscriptions.)

Thus do I know, Múrkhan Cháttan, commanding the Eastern army. (The Jews take Kil-padei for a proper name). It seems these two are the great Eastern vassals on the road which leads through the Coimbatoor gap to the old fields of battle between the Pándi, Chóla and Chéra princes. I conclude from Document I. that in a later period the Chera country properly speaking had been taken from the Cheramáns.*

h. Candan of Great Taleicheri (ותלהשיריכנדו) Kil-way ("under-mouth" Eastern commander or Viceroy, i. e. dhalawa "army-mouth" or general) the mountainsplitter—The writing of Kelappa.

N. B.—It is open to question whether these persons are two or three. The Jewish version has only the first and the last הספר כילפיין leaving out the middle altogether. If Kilway be the name of a place, we must render "the writing of Kilway Kelappan the mountainsplitter" and the latter appellation may be taken for a title given to the writer because he deals in metals, [compare the Grand goldsmith of the I. Document]. But as Buchanan says the Jews find in the names of the subscribing Rajas the Colattiri and the Curumbenadu rulers, we may find it possible to recognize in the Candan of Taleicheri a family member or vassal of Colattiri, who with this sea-town recognized the rule of the Perumal, and in the

* According to Ellis it was divided among the great vassals as early as A. D. 389 and finally though at what period is uncertain was reduced to a province of the Pandya Government Trans. Mad. Lit. Soc. p. 19. W. E.

mountainsplitter the chieftain of the Curumbar or jungle-dwellers, so called either from his mines at Tamracheri or from a pass he opened through the Ghauts. It does not seem that in the time of these three Documents the northern Malabar or Colattiri did belong to the Perumals : for if it did, its Rajas would certainly have obtained as high and conspicuous a place in the line of witnesses as their relations of Venadu, to whom in old times they appear certainly superior. They recognized perhaps a Tulu or Maisur dynasty as supreme Lords.

The Jewish version adds פריפ דפשהואמלךקוגוי לאנאכרבנח בגבזר שהזיחאותויורשובמקומ.

"Perimpadappu who is now the Raja of Cochin is here not mentioned because (the Perumal) made him his heir and successor." There is certainly some truth in this remark, from what is said I, Pl. i. 1. about the name Vira Kérala, now the standing appellation which the Perimpadappu assumes on his accession to the throne.

Conclusion. This III. document leads us into a time plainly distinct from that of the Syrian grants. The Perumals sway extended over a greater stretch of country, there is no recognition of the Brahminical hierarchy, the manner of marking the year is likewise peculiar and referring perhaps to an era of important political and religious changes. The Kerala Mahatmyam and the Kerala Ulpatti speak of one Buddhist King, whose reign they strive to shorten without accounting for the great change they confess to have been wrought under him. And certainly this first introduction and naturalization of foreigners is less likely to have been the work of a Brahminical government than of any other under the sun. The Bramins, when their authority was re established, may have continued and imitated what had been done by their predecessors chiefly if they found the Syrians conniving with idolatry, as their own tradition makes them, but they could hardly have been the first to suggest such a plan To indulge in conjecture about the meaning of "Bauddhas," [Budd-

hists ? Jains ? sects from the West, at present generally applied to the Muhammedans] would here be out of place. But I think enough has been said to support the suggestion that the Government which could afford such a first grant to foreigners, remitting even the vassal's tribute, [which was never done with the Syrians*]—was less suspicious, more powerful and enterprizing than any native rule which has succeeded it on this coast.

Notes on the preceding Papers.

The documents for the preceeding able exposition of which the Society is indebted to Mr. Gundert have long been a source of interest, from the expectation that they would throw light on the early advent to India of the two remarkable races to which they relate. Though this hope has not been fully realized, the field of inquiry now opened will probably lead to farther discoveries. It would be worth while to search for inscriptions on stone on the sites of all the earlier christian villages and places of worship. The sasanams at the Tiruvanjiculam temple noticed by Mr. Gundert should also be transcribed. The Sub-Committee would gladly undertake the examination of any of these that may be forwarded to them.

Impressions of the Syrian deeds I. and II. having come into the possession of a member of the Sub-Committee, it has been resolved to give fac similes of the second which will accordingly be found in plates 4. 5. 6. 7. 8. of this vol. The first being in characters differing little from the modern has not yet been considered worth the same trouble, besides being unfitted by its greater size. It is 14¾ inches long by 4 broad, the part occupied by the writing being nearly 13 inches.† On the margin of one side is the figure of a Shankh

* The wording here leads to the conclusion that Anjuwannam was in a later period obliged to pay the tribute, excepting only in cases when the vassal had to defend himself against unconstitutional acts of Government.

† Buchanan Chris. Res. p. 140.

or sacred whelk-shell. The last plate of II. in the two undeciphered characters is plate 8. The first which Buchanan called the nail headed has been rightly conjectured by Mr. Gundert to be Cufic. In the earliest Cufic inscriptions the letters are frequently ornamented with flourishes or run into each by the device called toghra, of which specimens may be seen in the tombstone from Malta engraved in the first volume of the Mines de L'Orient and in the Ceylon inscription deciphered by Professor Lee in the first volume of the Trans. Royal Asiatic Society p. 545. In the present instance, the extremity of every letter is made to end in a triangle both above and below. It is read as follows and consists of names of certain Arab witnesses.

. . . يد لك ميمون بن ابر
هيم و شهد محمد بن منيع
و شهد طي بن علي و شهد
عثمان بن الحزر ما ت و شهد
محمد بن يحيى و شهد عمر و بن
ابرهيم وشهد ابرهيم بن
* * * * * و شهد بكر بن منصور
و شهد القاسم بن حميد
و شهد منصور بن عيسى و
شهد اسمعيل بن يعقوب

The first word which is wanting may be هذا the reading would then be Meimun Son of Ibrahim arranged this for you? and Muhammad Son of Mania witnessed it and Tai Son of Ali, ditto. and Osman Son of Ali Hazramat? do. and Mohammad Son of Yahia do. and Omru Son of Ibrahim do. and Ibrahim Son of * * * * * do. and Bakr Son of Mansur do. and Alkasim Son of Hamid do. and Mansur Son of Eesa do. and Ismael Son of Yakub, do. The name omitted is doubtful.

The next character is probably another list of witnesses— for the same words recur repeatedly. Thus the first word is

repeated ten times. It is probably an expression equivalent to the شهد of the Cufic document and should serve as a clue to make out the whole. The last word is found six times. A word in the middle of the second line is the first of the fourth and a word in the fifth line occurs three times.

One of the most important points in the Jewish or III. document is the determination of the date regarding which the following conjecture is hazarded, being the conclusion arrived at in an attempt to translate the grant itself three or four years ago.

The words are, "irandám-andeikk'-etir-muppatt'-aram-andu" which appeared to mean "the 36th year" [of the Cycle] "corresponding with the second year" [of the reign] or it may be the 36th year of the Cycle opposed to or in contradistinction to the 2d which would be the 3rd Cycle, i. e. of Parasurama, the era prevalent in Malabar. Mr. Whish rendered it the 36th year of the 2nd Cycle. But besides that the construction does not bear this meaning, it is not customary to note the particular Cycle, which indeed would hardly seem necessary in periods of 1000 years each. I conclude therefore that the first is the true rendering, the 3rd Cycle or that which last closed being the one referred to, and as it commenced A. D. 825, the year of the grant, the 36th, would be A. D. 861. To take the 2nd Cycle would evidently go too far back. This would give 139 B. C. Inscriptions of that period are in a form of character much more ancient from which all those now in use are proved to have been derived. And to this degree of antiquity the writing in the Jewish tablet possesses no claim.

W

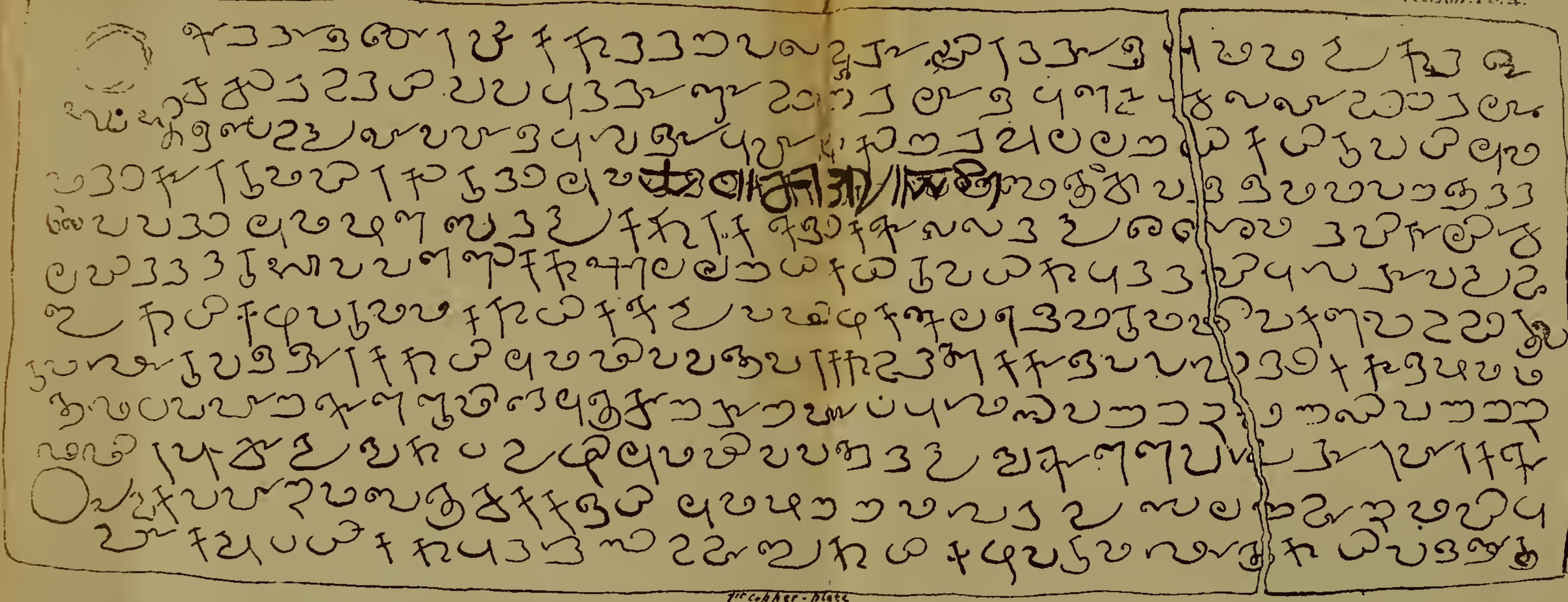
[After the No. had gone to Press, the Sub-Committee were favored by the Rev. Mr. Taylor with some further observations contained in a letter from Mr. Gundert to him. Mr. Gundert observes with reference to the al-

teration of a word which occurs three times in the course of II. document (vide Plate 4. 4th line of 1st Copper Plate, Plate 5. last line of 2d Copper, Plate 6. also last line) "that there were at first some words in the common Alphabet of the document, but they have become next to illegible by the marked characters engraved over them, nor do I think it of importance to settle what the names erased may have been, but as the interpolations recur three times, there is no difficulty in separating them from the letters written at first. I have no doubt they meant Manikkirámam with the last ம repeated,—as often before initial vowels." As regards the term Chakravarti in I. Mr. Gundert adds, that he purposely left it untranslated as the question might arise whether the Perumals had an exclusive right to this title. At present all Kerala Rajas lay claim to both. With reference to the suggested explanation of Anjuwannam as meaning five castes or five colors, which the Jews also have tried. Mr. Gundert observes, that from the uniform language of the documents, he concludes it must be meant for a name as surely as Manigramam is one; and this conclusion is strengthened by the fact that even the very exact first document does not rectify the vulgar pronunciation அஞ்சு into ஐந்து lest the name should become liable to misinterpretation. Mr. Gundert has likewise forwarded a reading of the Cufic signatures which he has made out by means of some inscriptions published in the Bombay Asiatic Society's Journal, which differs little from the version given above. The first word he supplies by شهد "tho' the place" he adds "will scarcely suffice"—the next word he omits. In the third line for Tai he reads Sali—the fourth line he also leaves and the 5th he reads اسد بن تحفی Asad bin Tohfi. The 1st and 2d names in the 7th line are also undeciphered. He then adds "as this is the first list of the witnesses subscribing (the others being one in unknown characters but clearly Semitic, written from right to left, and one in Hebrew) and at the same time the longest and most carefully engraved, it would seem that these witnesses must represent one of the parties treated of in the document. If they represent Anjuwannam why have we afterwards four Hebrew signatures? If Manigramam, it would seem that it had at that time passed into Arabian (Jewish, Christian, or Mussulman) hands. Or are these the 600 (II. *d. f.*) authorized to protect the new Church in conjunction with Anjuwannam and Manigramam?" Mr. G. likewise notices the frequent recurrence of the first word in the unknown character—and concludes by adding the following additional remarks by the Rev. Mr. Peet at Mavelecara on the greater Syrian grant:

1. "Manigrámam," he asserts, "is the name of a class of Christians, relapsed into heathenism through the influence of a sorcerer (Manica Vachakar?). Some of that class are still to be found near Quilon. Each individual is called (in Native books?) a മണി, a jewel, on account of their apostacy—and the whole of them constitutes now a subdivision of the Sudras." I had indeed been startled by the Indian-looking name "Iravi Corttan," which does not at all look like the appellation of a Syrian Christian: still I thought myself justified in calling Manigramam a Christian principality—whatever their Christianity may have consisted in—on the ground that from Menezes' time, these grants had been regarded as given to the Syrian Colonists. I now venture the conjecture, that they were disciples of Mani, a colony of Manicheans, such as the Arabian travellers found in Ceylon.

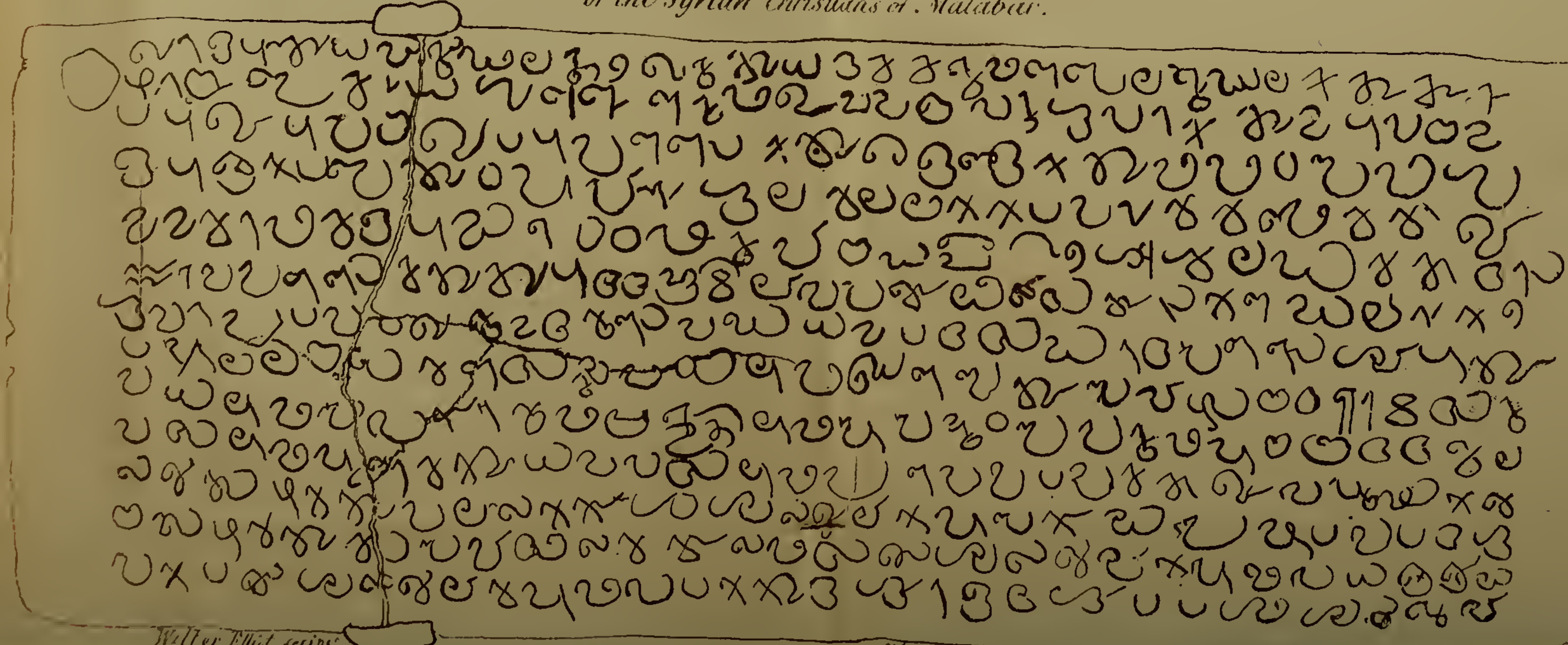
2. "The ധൎയ്യക്കാർ, whom Native books oppose to the party just mentioned as a class of stedfast confessors, exist still in the South of Travancore, have their ceremonies conducted by Syrian Priests, and differ from Nazranis merely only by their preserving the hair tuft." I see no reason, to give up my former conjecture of the identity of ധൎയ്യാ, and the തരിസാ of the inscription; (fr. such dialectical changes as வாயில வாதில (Mal.) வாசல, but venture yet somewhat farther to attempt an indication what the Tarisa Church originally was. I find in John de Monte Corvino's travels, that the Nestorians in China and Tatary were called "Tarsa;" the word is there spoken of as of Mongolic etymology. Might it not be derived from Tarsus, since the heads of the Nestorians (such as Diodor of Tarsus) were from Cilicia, and the whole sect may have affected to derive their origin from Paul's birth place. This hypothesis will be easily refuted or confirmed by those who have access to original works on the subject.

3. "Curakkéni Collam." Tradition states that the Syrians came to this country in two bodies, one party landed near the modern Quilon at a place now engulphed by the sea, the other at Codungalur or Mahodeverpatnam. The practice in documents observed till within the last 80 years was invariably to mark to which of these 2 bodies a Syrian belonged; for instance കുറക്കേണി കൊല്ലംമുതൽതാഴക്കൊടൊത്ത നവിൽക്കൂടിയിൽനിന്നും കുറി ശ്ശു മൂട്ടിൽമാത്തൻ and മറെ കാരത്തവർ വടക്കൻമുതൽക്കൂട്ടത്തുങ്കടിയിൽ കൂടിയിൽനിന്നുംവൃത്താൻവീട്ടിൽക്കുഞ്ചൻ]



1st copper-plate

Fac-simile of a Copper Sasanam in the possession of the Syrian Christians of Malabar.



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2d copper plate, 1st side

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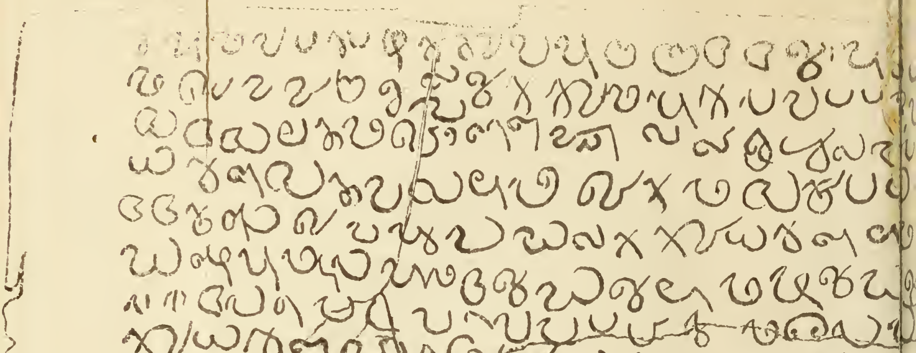

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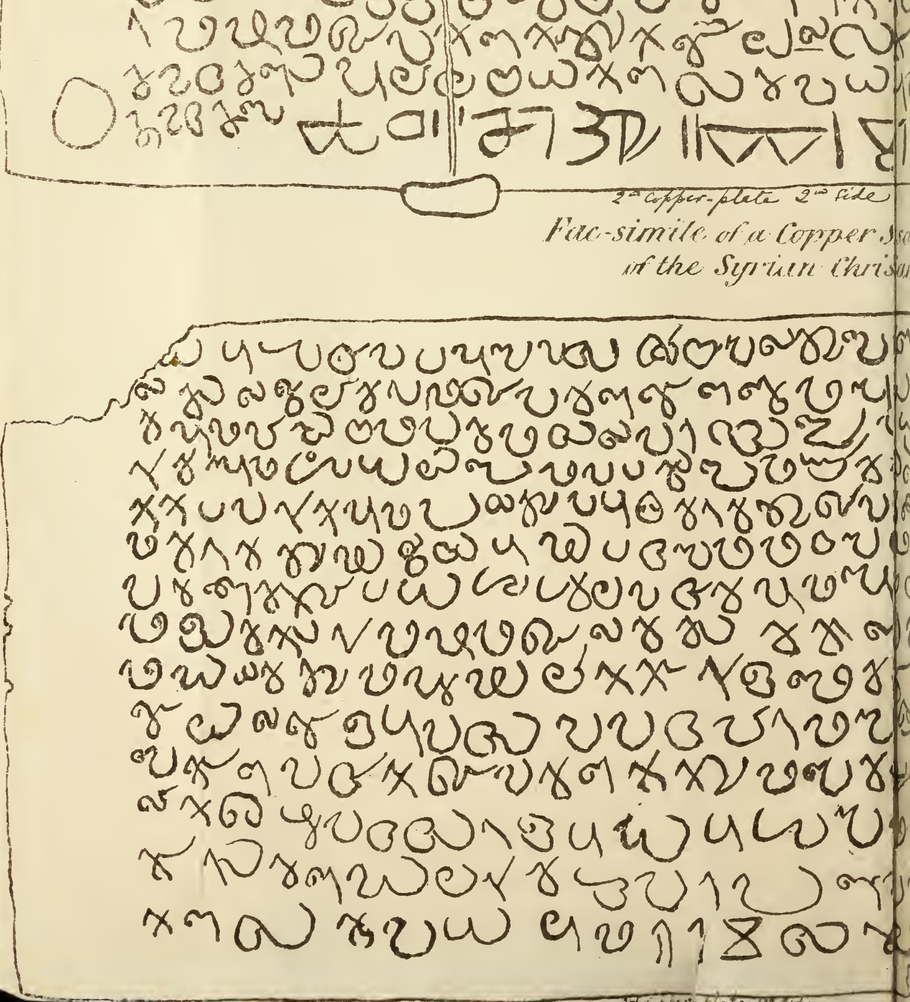
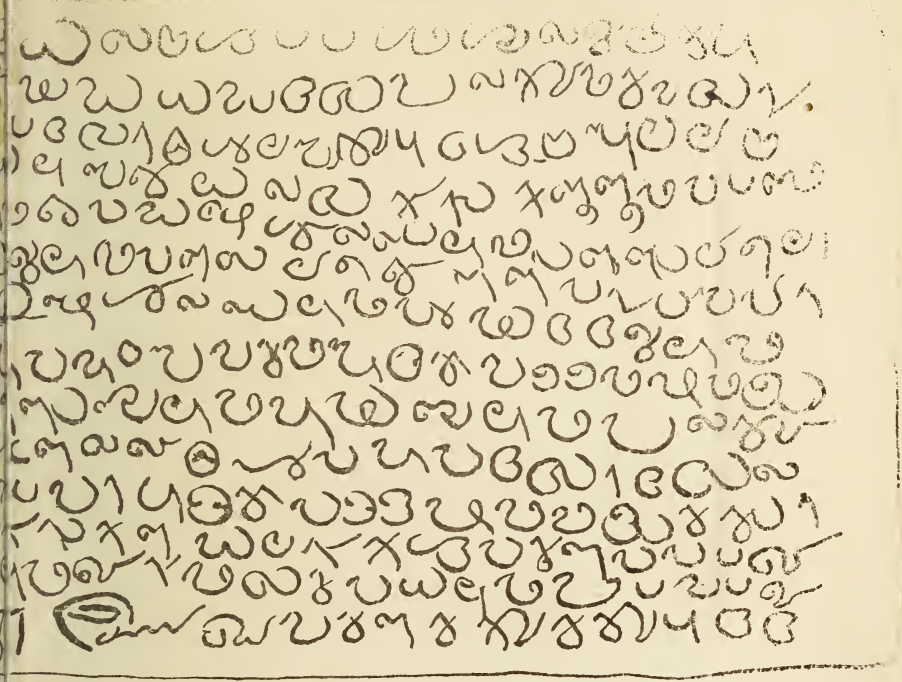


3rd Copper-plate 1st side



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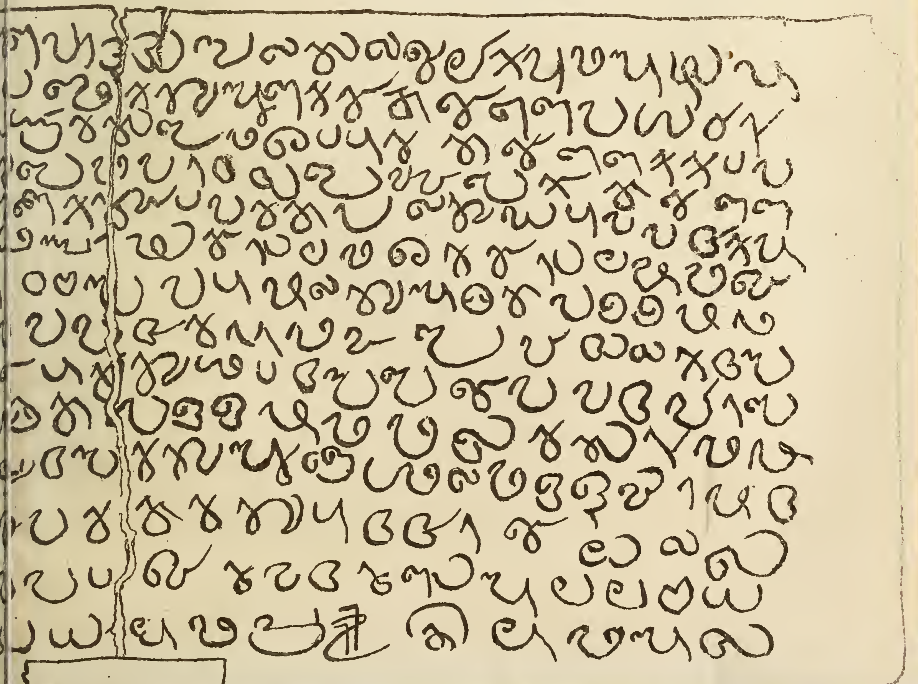

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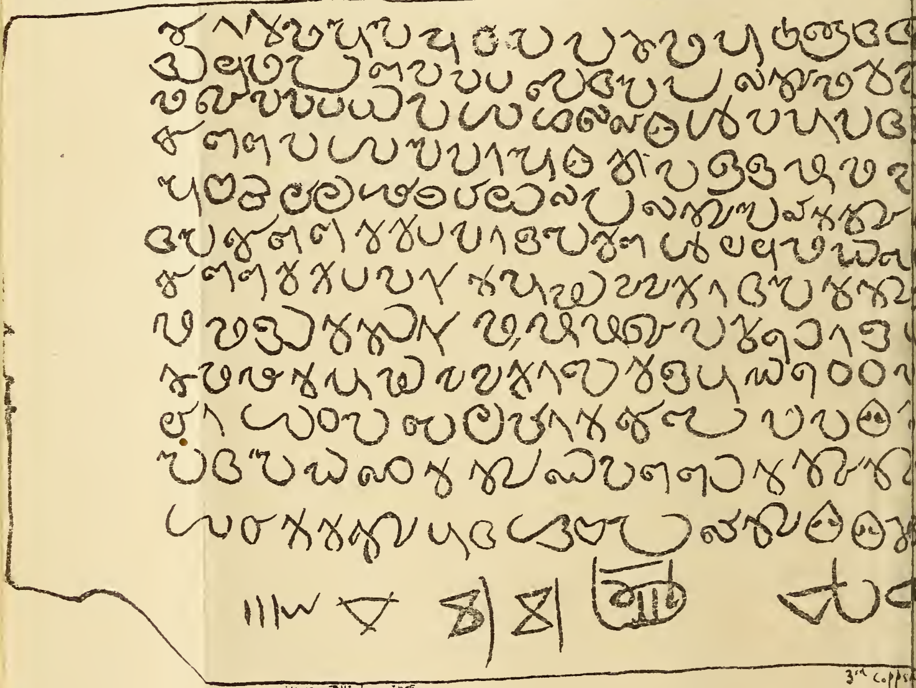

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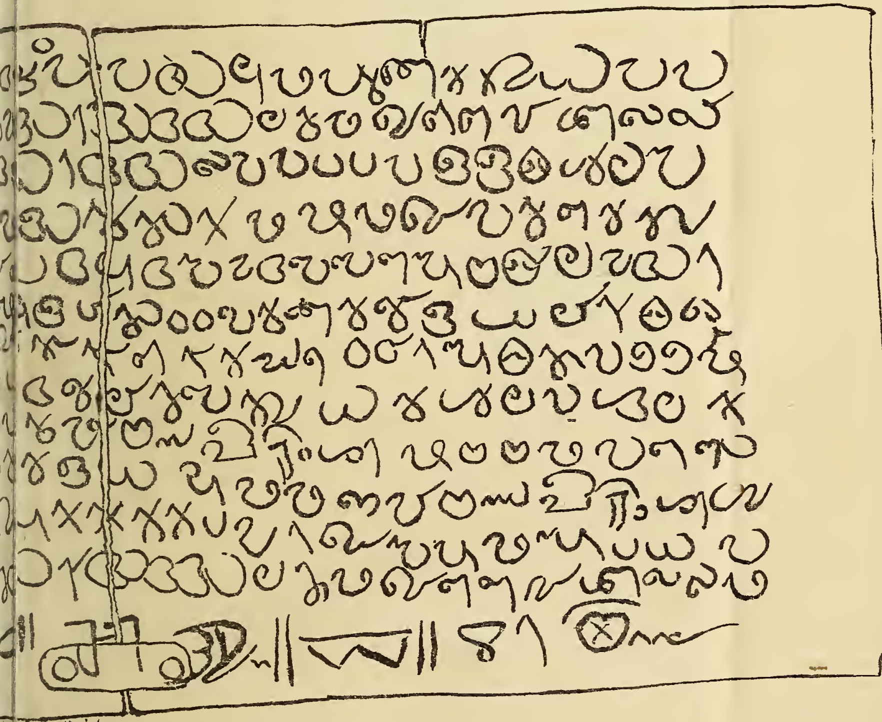

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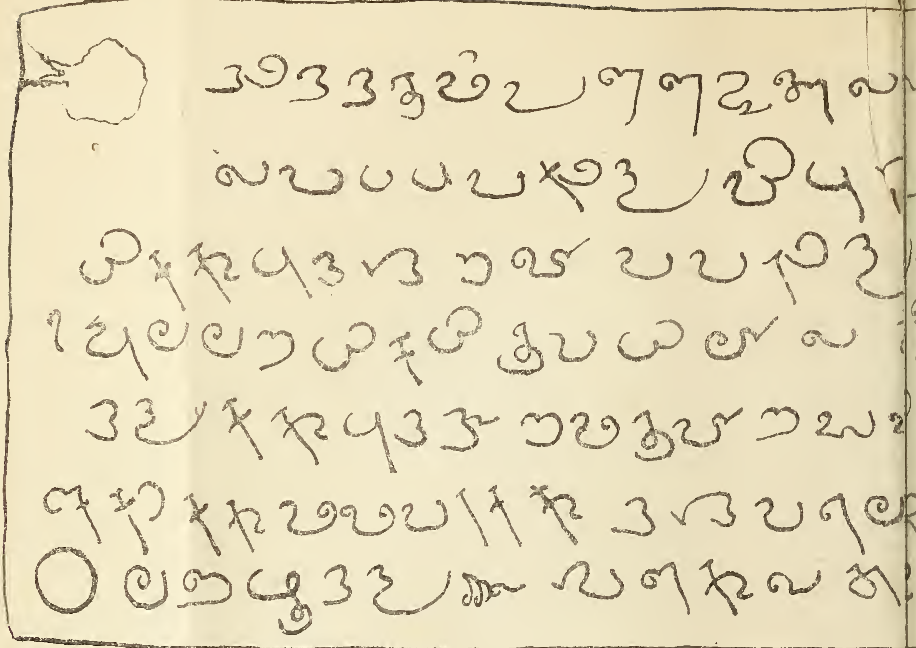

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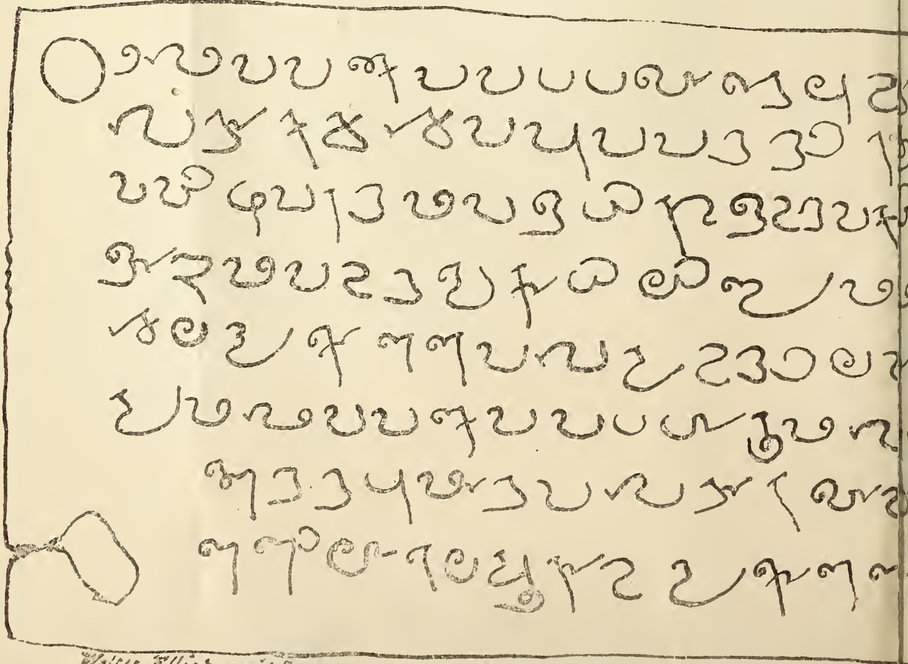

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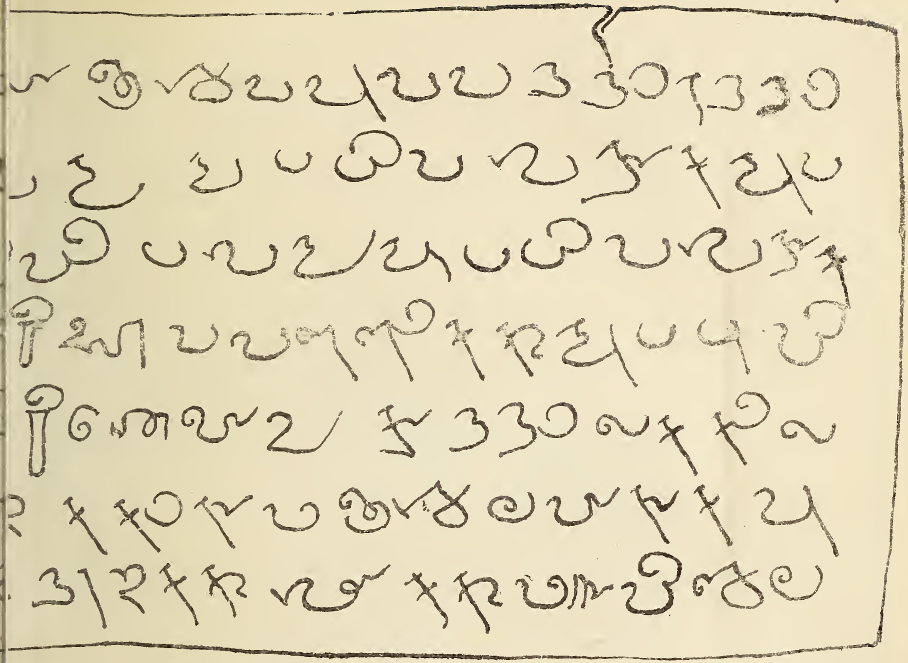

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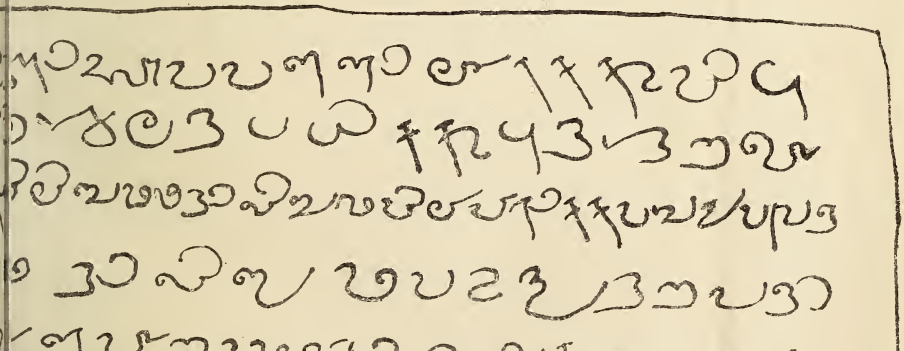

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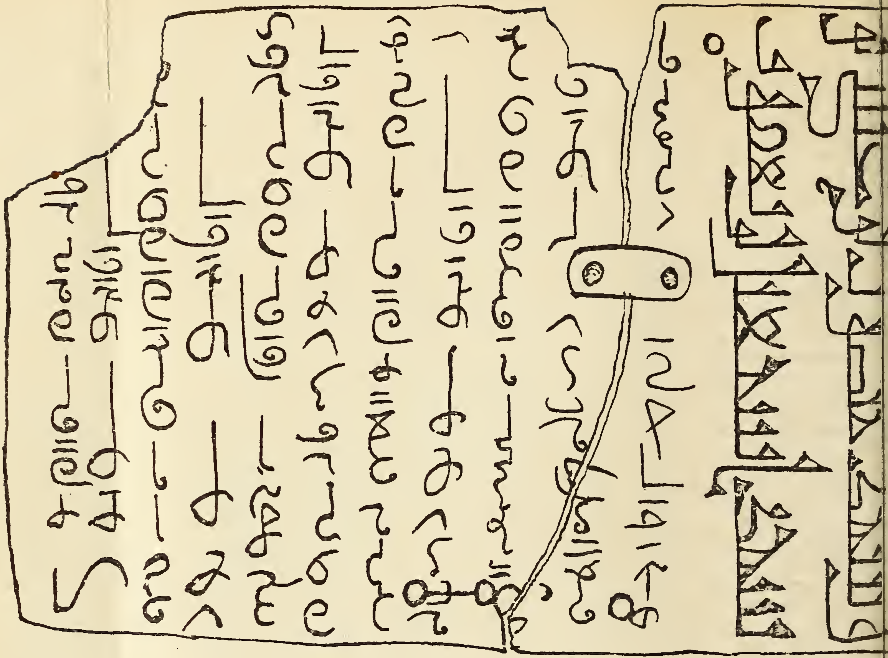

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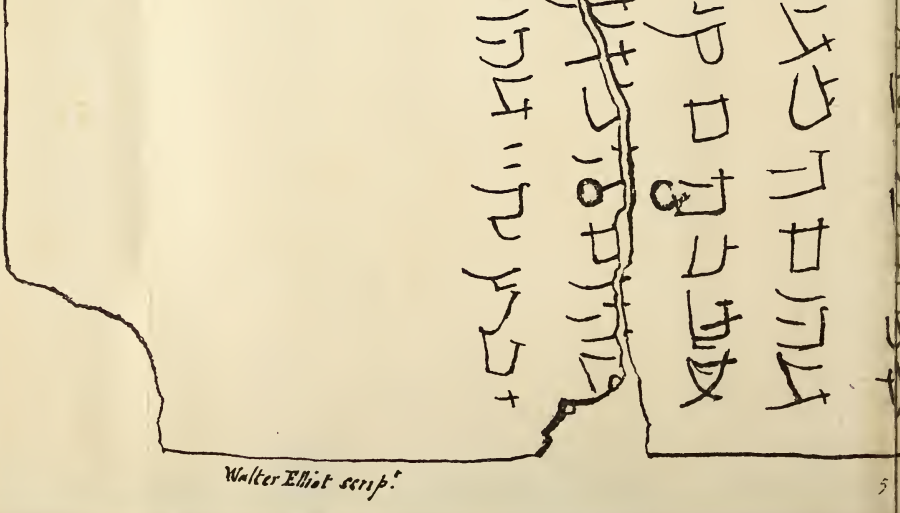

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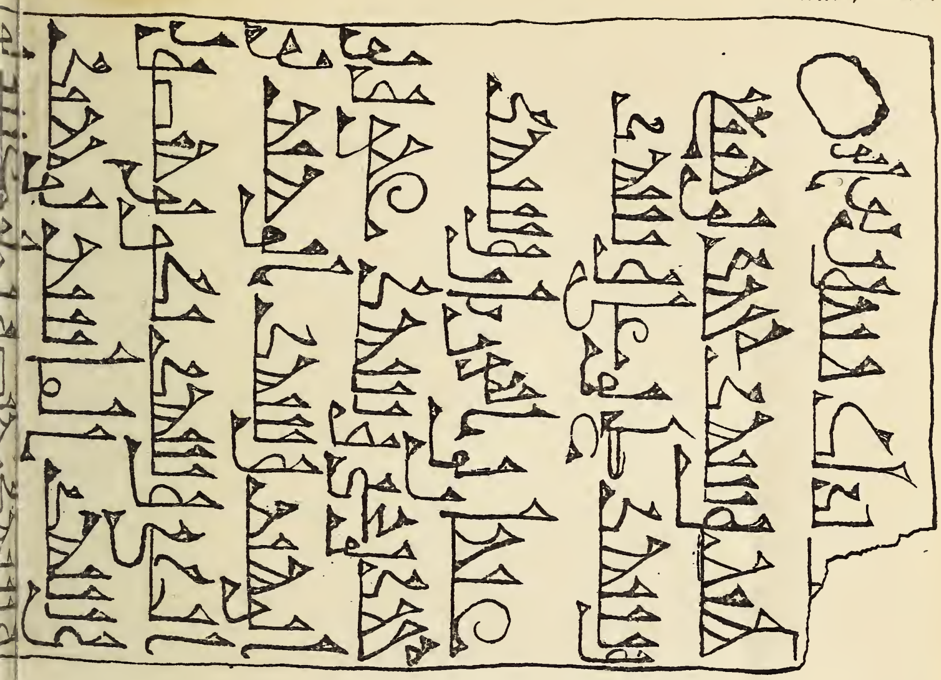
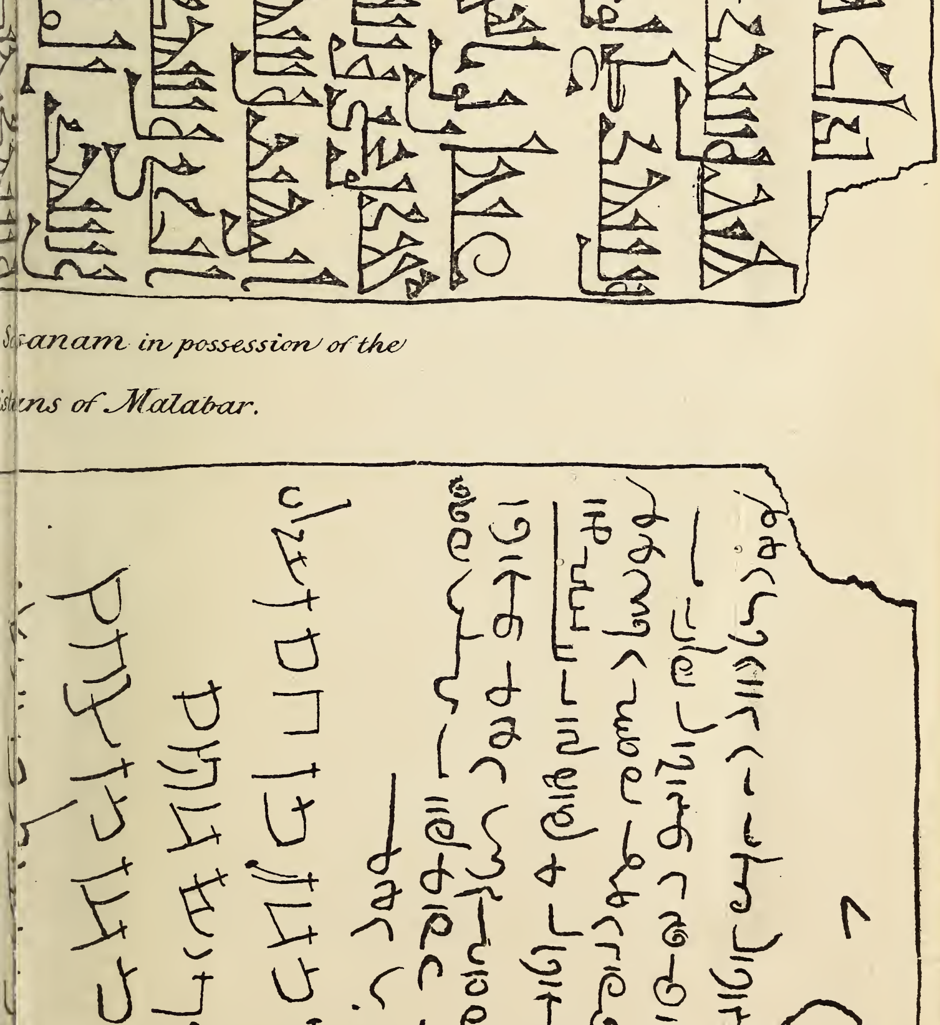


Sasanam in possession of the

stians of Malabar.



copper plate

IV.—*Farther observations on the Pondicherry Fossils by C. T. Kaye Esq.*

In the Madras Journal of Literature for November 1840 I attempted to describe the beds of fossiliferous limestone in the neighbourhood of Pondicherry and ventured to express a hope that further researches would lead to interesting and important discoveries. That expectation has since been fully realized. In Dr. McLellan's Calcutta Journal for July 1841 vol. II. No. vi. p. 238 some particulars of these discoveries were given, but since that account was written, our acquaintance with the fossils of the deposit has made still further progress, and I am therefore induced before quitting the country, to leave a short notice of the organic remains which the rock contains. I do not indeed attempt to particularize the numerous variety of marine shells, as to do so requires a much greater knowledge of conchology than I possess, and perhaps the most experienced conchologist could hardly hope to describe them without an opportunity of comparison with collections, which the museums of Europe alone contain. A few of the principal and most curious of these remains will therefore be alone noticed.

Nautilus.—This shell was first discovered in January 1841 in large numbers. Dr. McLellan distinguished three species, but as they have been described in his number they do not require any further notice at present.

Ammonites.—A very great variety of this extinct shell, I think at least thirteen or fourteen distinct species, have been discovered since the communication in Dr. McLellan's journal was penned. These in general run small, a few only of considerable size having been found. Many of the species appear to me to be remarkable, from the absence of those bars and bosses which usually fortify the European species, and after a careful examination of Sowerby's Min : Con : and

other works on fossil Geology, I have been unable to identify with certainty any one species.

Baculites.—One of the most striking peculiarities of this rock is the abundance of Baculites which it contains, some of these are of considerable size. No complete specimen however has been found,—the largest which I have, is about 7 inches in length and two at the greatest breadth. Of this 5 inches is the outer chamber which contained the body of the animal - the shell when entire was probably 17 or 18 inches in length, and allowing 1 inch for an evident fracture at the mouth, it will be seen, that the outer chamber constituted, at least one third of the whole shell—but Dr. Buckland ranks the Baculites among those shells of which the external chamber was not sufficiently large to contain the entire animal. This Fossil appears to be rare in Europe, but many larger masses of stone at Seedrapet were almost composed of Baculites—it sometimes consists of beautiful calcareous spar, with the foliated sutures most elegantly marked on the surface,—in other specimens the outer shell is preserved, and the fractured end frequently displays the form of the septa in a very perfect manner.

Hamites.—A great variety of shells, evidently allied to the European order of Hamite has been discovered. Some specimens are merely hooked at the smaller extremity—others are curved throughout their entire length—the ribbings or undulations are also various, some being minute and others bold and distant from each other—the sinuous edges of the chamber are frequently visible, and the fractured end, as in the Baculites, often well exemplifies the form of the septa.

Belemnite.—The existence of this Fossil is still doubtful.

Orthoceratite.—Three or four specimens of the species of this shell were found apparently exactly resembling the *O.*

cinctum of Sowerby, though this shell is rare as late as the secondary strata.

Echinus.—I think 4 species of Echinus have been discovered—the most common exactly resembles the *Spatangus cor marinum* of Parkinson : it was collected in considerable numbers in the ploughed fields at Seedrapett.

Zoophyte.—Three or four species of Zoophytes have been found. By far the most common, is the one mentioned in the Madras Journal for November 1840, and at first mistaken by Dr. McLelland for the teeth of Saurians. It is found in great numbers—considerable masses of stone, consisting sometimes of numerous individuals cemented together in a solid mass and presenting curious and interesting sections. Further acquaintance with this fossil induces me to consider it a species of Turbinolia.

Fossil Wood.—Many specimens of Calcareous fossil wood have been found, which generally wear the appearance of having been drifted long at sea. They are generally bored by a species of Teredo, the long tubes of which are sometimes so closely packed, as to leave little of the original substance remaining. The cavity of the tube is filled sometimes with calcareous spar, at others, with a dark and hard lime stone. Transverse sections of these specimens when polished, present a beautiful and curious appearance.

Fishes Teeth.—I have lately been very fortunate in obtaining these interesting fossils—they are of a small species,† retain their polished surface, are of a brown colour, and a few with serrated edges.‡

The above are the principal and most interesting Fossils found at Seedrapett—associated with them are a great num-

† For "small" I would read "shark."—B. C.

‡ Portions also have been discovered, striated, and of that dark enamel, belonging to the Sauroids.—B. C.

ber and variety of Marine shells, of which despite the hardness of the matrix, I have made a large collection. I have neither leisure nor ability to describe these fossils as they deserve: but I have forwarded to England a very complete series and have placed with Dr. Cole for the Madras Museum another set, which may be examined by those who are curious in these things.

In the number of the Madras Journal already alluded to, I noticed a bed of fossiliferous limestone existing at Ootatoor in the Trichinopoly district. I have never been able to visit this spot—but have had opportunities of examining several cart loads of the stone. It is a dark and fine-grained limestone, containing bivalve and univalve shells in great abundance, and in a wonderful state of preservation. In all the specimens the shell itself remains, and in many instances retains, not only its pearly lustre, but even a portion of its original colour. Many of these shells are probably undescribed. The univalves appear chiefly to be of the genus Rostelleria, but without an opportunity of comparing them with other specimens it is impossible to state this with certainty. Among the bivalves however I must particularly notice one so exactly resembling the *Cardium Striatulum* described in Sowerby's Vol. VI. Page 101 that we may perhaps be justified in considering it identical. The *Cardium Striatulum* is said to be found in the limestone immediately above the Coal at Brora, but as this would argue a very high antiquity for the deposit in the Trichinopoly district, we must not be too hasty in coming to a conclusion on the subject. I have alluded so particularly to this shell because as will be presently seen, this is not the only situation in which I have found it.

Although I have examined a large quantity of the limestone from Trichinopoly I have met with only one instance of the extinct families of chambered shells peculiar to the secondary

rocks—this consists of the cast of a single chamber of a very large Ammonite—it is in a beautiful state of preservation, and retains the foliated edges at the sides and the groove for the siphuncle on the back, very distinctly marked—it is six inches in height and must therefore have belonged to a very large shell, greatly exceeding in size any of those found at Seedrapett. But this as will be shewn hereafter, is not the only evidence which we possess that the deposit at Ootatoor in Trichinopoly is to be described to an age of gigantic Ammonites.*

In a former number of this Journal Lieutenant Newbold suggested that the fossiliferous beds of Pondicherry, probably extended into the Verdachellum talook of S. Arcot. It was long before I was enabled to obtain any positive evidence of this fact, and it proves how little dependence can be placed on Native evidence, that all enquiry among those who ought to have been best acquainted with local circumstances, failed to elicit the required information. Accident however subsequently established the correctness of Lieutenant Newbold's views and the sagacity with which he had drawn his inferences. Mr. Murray the Sub Collector of South Arcot in the course of a ride about 6 or 7 miles from Verdachellum, observed that the surface of the rock by the side of the road, was marked with shells, and was kind enough to send me a few specimens. It consisted of an impure limestone, containing much earthy matter, and a number of bivalve shells, resembling pectens of 2 or 3 species. One of these shells closely resembles the *Pecten Beaveri* in Sowerby's Min. Conc. II. P.131—another nearly resembles the *Pecten quinque costatus*. I afterwards received a further supply of the rock, but failed in obtaining from it any further variety of fossils.

In November last however I was enabled to pay a short visit to Verdachellum for the purpose of exploring the deposit. The formation round Verdachellam struck me at first

* I have also met with the teeth of fish in this formation.—B. C.

sight as nearly resembling that at Trivicary—it consists of the same friable red sand, interspersed with the same small rounded quartz pebbles and the same indication of iron, and this same resemblance has been borne out by the subsequent discovery of a piece of silicified wood. The limestone containing the shells appears first at the bottom of a valley near the Village of Paroor 7 miles from Verdachellum—the high ground between it and Verdachellum consists of the red sand, but the limestone rises into small hills on the opposite side of the Valley. In the bottom there is a large Nullah, branching from the Verdachellum river. By the road side, the limestone appears in flat slabs, darkened by exposure to the weather, and the surface is thickly marked with the white Pectens—on descending however to the bed of the stream I was much surprised at observing one of the large univalves (Rostellaria) already mentioned, as characteristic of the Trichinopoly limestone—further search in this direction put me in possession also of a very large specimen of the shell mentioned as resembling the *Cardium striatulum*, which is also so characteristic of the same formation, and indeed I afterwards found almost all the Ootatoor bivalves in this locality, so as to connect the two deposits, beyond the shadow of a doubt.

But what rendered our researches at Paroor most interesting was the discovery of a large number of Ammonites. They are of 3 or 4 different species, and all of them as far as I could observe, different from those at Seedrapett. Some very large fragments have been found—one in particular, is a portion of the outer whorl of a very large shell—the stone containing it has the foliated edges of the chambers at the sides, and on the back of the convex surface, the groove of the siphuncle may be easily traced. Adhering to the under or concave portion of the fragment, is a portion of the siphuncle of the inner whorl in a singular state of preservation.

The depth of this whorl must have been at least 7 inches,

and must therefore have belonged to a very large Ammonite. We have this evidence that when this deposit and that at Ootatoor in Trichinopoly were in the course of formation, gigantic Ammonites still inhabited the Ocean, which covered that portion of the globe, which is now the South of India.

The most common Ammonite at Paroor is however a small species—it has a small umbilicus, and the outer whorl conceals the inner ones : it is remarkable for a very distinct and well defined ridge along the back over the siphuncle.

There are also portions of Nautili at Paroor, apparently similar to those at Seedrapett—and I have an Echinus from this locality which I cannot distinguish from the species of Spatangus found at the former place‡

The discovery of this deposit near Verdachellum, appears te be of much importance—further research in this neighbourhood will probably demonstrate that the formation is a connecting link between those of Ootatoor and Seedrapett—it undoubtedly proves that the fossils of Ootatoor, many of which are so fresh as actually to retain a portion of their color are to be ascribed to the secondary Œra—and while it contains many shells which are common at Ootatoor, it holds also the Nautilus, Echinus, and Ammonite which are the characteristic fossils of Seedrapett. It is highly probable also that a series of intercalated secondary sand and limestones may be hereafter traced through this portion of the Peninsula of India, and I sincerely trust that the unexpected success which has attended the researches of Mr. Cunliffe and myself, may prove an inducement to others to prosecute a science hitherto almost totally neglected in this part of India, but which will from this very fact, be found more amply to repay its votaries.

‡ The genus Cidaris however was numerous at Paroor, though as yet undiscovered at Seedrapett, and the baculites of the latter were wanting at Paroor : and not a single chambered shell, save the fragment above mentioned, has been found at Ootatoor.—B. C.

[Note.—Some interesting observations on the organic remains above described, when recently exhibited before the Geological Society in London will be found in the Miscellaneous Notices at the end of this No.]

V.—*On a fragment of Greek Pottery from Affghanistan.*

The recent transactions in Affghanistan however unfortunate in their political results, have at least served to increase our knowledge of the earliest recorded connection of civilization with the still barbarous inhabitants of these inhospitable regions. The discovery of the finely executed coins of Græco-Bactrian sovereigns has enabled us to trace the progress and gradual decay of the colonies planted by the Macedonian invasion and contributed a list of princes whose very names were hitherto unknown; and it was chiefly from these that the antiquarian acumen and tact of the late James Prinsep was enabled to trace the introduction into this country of an improved style of coinage by the substitution of the dies of the Greek artists for the rude punches and moulds previously employed in the Indian mints. The researches of others were rewarded by the acquisition of gems and seals engraved in the best style of art and the silver Tazza with the story of Silenus obtained by Dr. Lord in Budakshan and again unfortunately lost in the sack of Sir A. Burns' house in 1841, is familiar to all.

The fragments of a Greek fictile vase lately exhibited at the meeting of the Society and of which a figure is here given, afford an additional record of the cultivation of Grecian taste in an uncongenial clime, for tho' some of the other relics, lately discovered, might have been transported from the parent soil, it is hardly possible that so fragile an article as a terracotta vessel could have been brought from any distance.

The fragments in question are $3\frac{4}{10}$ inches in length by $1\frac{6}{10}$ inches in breadth and seem to have formed the handles of a vessel as shown in the restored sketch. They display a female figure in flowing garments, the right hand holding something like a cup, the left what may be taken for a wreath

Fragment of Greek Terra Cotta; found near Gundamuk, 1842.

or chaplet. The attitude of the figure and the disposition of the drapery are peculiarly elegant and graceful and afford indisputable evidence of their connection with Ionian art.

Lieutenant Cunningham late of the Shah's Sappers who brought them from the Jellalabad valley, gives the following account of them "I have but little to add to what is said in the following letter regarding the finding of the terracotta fragments. Major (then Captain) Burn was commandant of a regiment of Afreedis called the "Kyhber Rangers" and was quartered in open cantonments at Gundamuck at no great distance from the spot on which these figures were discovered. On my second visit to Cabul with the Army under General Pollock I climbed the hill, but, as you may suppose, not under the most favorable circumstances for antiquarian research, and found nothing to reward me for my trouble. I may mention however that it overlooks, and is within long musket shot of the hill on which the remnant of the unfortunate Cabul force made their last stand on the 13th January 1842. How strange it is to re[illegible]t that, a narrow camel-track divides two eminences one of which is covered with fragments of Grecian funeral urns, and the other is whitened with English bones. So much for the two European powers which at a distance of twenty centuries held sway amid those bleak mountains. I may also add that on the 11th of November 1841, the box containing these precious relics fell into the hands of the enemy, and was recovered by singular good fortune many months afterwards. This is Major Burn's Note.

"Jellalabad 30th June 1842.

"My Dear Cunningham,

I have the pleasure to send you the clay figures which I picked up near Gundamuck at the distance of about a mile and a half on the Cabul road They were on the very top of the hill. Its sides were strewn with broken pieces of pottery of similar clay to that of which the figures are moulded. Some of these pieces bore evident signs of having been parts of a large Vase—the

fragments being partly flat and partly curved ; which would lead me to believe that the Vase or pot must have been a flat bottomed vessel. I had a piece of this description laid by, but I am sorry to say it has been lost.

(Signed) H. P. BURN.

From Major Burn's observations it is probable that the vessel to which the handles were attached was of a flatter shape than that represented in the drawing.

VI. *Supplement to the Catalogue of Birds of the Peninsula of India, by* T. C. Jerdon, Esq.

(*From No.* 29, *page* 227.)

[Note.—In consequence of the suspension of the Journal, this article was printed by the author and circulated among his friends—but has never hitherto been published.]

No. I.—*Vultur Indicus.*

This large vulture is by no means so common as the *Vultur Bengalensis,* and chiefly seen perhaps in the neighbourhood of mountainous and jungly districts. I give the dimensions of one killed in a valley on the range of Northern Ghauts between Kunner and Ajunteh. Total length 43 inches; extent of wings upwards of 8 feet; wing from flexure 29 inches; tail 12 ; tarsus nearly 5 ; mid-toe with claw 5 ; hind do. 3½ ; bill straight to gape 3. Irides brown; bill and cere bluish horny ; legs dirty cinereous.

No. 6.—*Pandion lineatus ?*

This may have been the *Haliœtus Icthyœtus* (No. 8) which I have not yet observed myself.

10.—*Aquila bifasciata.*

I have some doubts whether this be a distinct species or not from the *Wokhab (Aquila Vindhiana),* but if they are identical, at what age and under what circumstances the white markings on the wings appear, I am not aware. I possess a specimen, shot in company with several of the *Wokhab,* which had the white bands though not distinctly defined. It was larger than the generality of that bird, and I give its dimensions for comparison.

Length $31\frac{1}{2}$ inches ; wing 22 ; extent of do. nearly 6 feet ; tail 11 ; tarsus $3\frac{3}{4}$; mid toe 3 ; bill to gape 3.

11. *Aquila Vindhiana.*

This eagle descends readily on carrion and drives away the vultures. I have seen 3 or 4 caught at once by a net over the carcass of a sheep. I saw a florikin struck down and killed by one sometime ago. I had slipped a luggur at it, and the falcon was in hot pursuit, when two of these eagles suddenly pounced down from a great height in the air, and pursued the florikin with much energy. One of them struck it down to the ground, but was driven off by my riding up. I found the florikin lying dead. The *Wokhab* builds in lofty trees, and lays one or two eggs of a dirty white, spotted chiefly at the larger end with reddish brown.

12, ter—*Nisaetus ? ?—ovivorus.*—new species ?—Same as No. 11 bis of the Catalogue.—*Neilgherry Black Eagle.*

Descr.—Plumage of an uniform deep blackish brown, lightest beneath—upper tail coverts pale brown, barred with white—tail barred with white, most conspicuously so beneath. Inner web of the quills faintly barred with light greyish. Cere, gape, and feet deep yellow ; bill greenish horny, black at tip ; claws black ; irides dark brown.

Length of a female $30\frac{1}{2}$ inches ; wing 23 ; tail 14 ; tarsus 4 ; bill at gape $2\frac{1}{10}$; height at base 1 ; inner toe $1\frac{4}{10}$; do. claw $1\frac{9}{10}$; centre toe $1\frac{6}{10}$; claw $1\frac{2}{10}$; outer toe $\frac{9}{10}$; claw $9\frac{9}{10}$; hind toe $1\frac{3}{10}$; claw $1\frac{7}{10}$; weight 3 lb.—Of a male—length $27\frac{1}{2}$; wing 22 ; tail 14 : of another—length 29 inches ; wing 23 ; tail 14 ; tarsus $3\frac{6}{10}$; bill at gape 2 ; straight to front $1\frac{1}{2}$. Extent of wings 68 ; centre toe $1\frac{5}{10}$; claw $1\frac{2}{10}$; inner toe $1\frac{2}{10}$; claw $1\frac{8}{10}$; outer toe $\frac{8}{10}$; claw $\frac{8}{10}$; hind toe $1\frac{2}{10}$; claw $1\frac{5}{10}$; weight $2\frac{1}{2}$lb.

Bill bending from the base, with a well marked festoon in

the upper mandible—4th and 5th quills nearly equal and longest—1st a good deal shorter than the 2d—2d nearly as long as the 3d—closed wing as long as tail which is slightly rounded.

This remarkable eagle I have placed for the present, though with doubt, under the genus *Nisaetus*. It differs from it in superior length of wing and tail—its shorter tarsus, shorter toes, and more especially in their comparative size—the outer toe and claw being remarkably small, and the inner claw of very great size. The extreme shortness of the outer toe, is, as far as I can recollect, peculiar to it among the diurnal *Raptores* of this country, though common among the owls. Its habits too are, as far as I know, peculiar, and differ from those of the other Indian *eagles*.

I have lately procured two specimens of this curious eagle (the first I have been able to obtain, though I have frequently seen it), and a third specimen shot by S. N. Ward, Esq. has also been examined by me. It hunts about the edges of the hills more generally than on the higher parts of the table-land, and most frequently over bushy ground, though I have also seen it over forest, both on the top of the hills and half-way down the Coonoor Ghaut. It sails slowly along with very little motion of its wings, usually very close to the ground, hunting tolerably regularly, not unlike the *Harriers*, and like them hardly ever alights except for the purpose of feeding.

In the three specimens I have examined I found that eggs and nestlings had formed its only food. Among these I recognized the eggs of the hill quail (*Coturnix erythrorhyncha*) of the *Thimalia Somervillii*, and of some doves (*Turtur tigrina* and *T. Cambayensis*) besides others I did not know, and several nestlings. I have seen it, since I procured my specimens, alight for a few seconds on a large bush over which it had been circling for some time, and apparently devour

something. I found in this bush a dove's nest empty, which it had evidently robbed. This eagle thus appears to be habitually a robber of birds' nests, and as doves, as well as some other birds, breed throughout the whole year, it can probably sustain itself mostly on its favorite food, though it doubtless occasionly destroys young, feeble or sickly birds, and perhaps reptiles.

I may mention that the specimens I procured were beginning to moult, and the new feathers appear darker than the present ones, in some parts almost black indeed. I have not seen it in any other locality.

14.—*Circaetus ? undulatus.*

Specimens shot lately in the northern part of the Peninsula shew a larger size than those procured in the southern jungles. I give the dimensions of one I shot at Dowlutabad tank. Length 33 inches; extent of wing 62; wing from flexure 21; tail 14; tarsus $4\frac{1}{4}$; bill straight to gape $1\frac{9}{10}$; mid-toe with claw 3. This sub-genus of *Circaetus*, which differs in its straighter bill, and shorter wings, may be named *Ophaetus* in reference to its usual food.

18.—*Pernis cristata.*

I have lately procured one or two specimens on the Neilgherries—apparently young birds, which have the whole of the under plumage white with the shafts of the feathers alone brown—the head and neck, too, are of a much lighter shade, with a dark eyestreak. In these specimens the crest was well marked.

19.—*Pernis Elliotti.*

Since the first part of this Catalogue was printed, I have met with this *Honey Buzzard* near Jaulnah. I find from a specimen shot in a state of moult that it changes the white

under-plumage to pale brown, as the European *Honey Buzzard* and the crested species are known to do. It differs from the *Pernis cristata* in a shorter and higher bill, in having a yellow cere in its less conspicuous crest, and more curved talons, &c. &c.

20.—*Spizaetus milvoides.*

I have met with this curious bird several times since the first remarks were written. The young bird of the year is white beneath, with brown streaks, and has some white about the head and neck. This change of plumage seems common to many of this family (*Buteoninæ*) viz. the *Buteo Teesa*—*Buteo longipes*—*B. vulgaris*, all the *Honey Buzzards*, and even the kites (*Milvus Cheele*) though in a less degree; the under-plumage of that bird being brown with large blotches of creamy white. I was informed by my Meer Shikar that this bird had a very keen sight, and that it pounced on squirrels, doves, pigeons, &c. on the ground from a great height. In two specimens I obtained, the remains of squirrels were found—verifying this observation, which its habit, as observed at Trichinopoly, of pouncing upon tame pigeons, chickens, &c. also confirms.

Irides brown.

21.—*Buteo longipes.*

The living bird mentioned in the Catalogue, which I considered a young bird, had very nearly completed its change from the white of the head and lower parts to the adult plumage, as described, when it was killed.

Is this bird the *Haliœtus Macei,* of French authors ?

23.—*Circus pallidus.*

From an examination of many specimens, and access to fuller descriptions of the European *Harrier*, I am induced to consider this bird as identical with the *Circus cyaneus* of

authors. It does not breed in this country, migrating in March or April from the northern parts of the Peninsula, and returning in October or the end of September. The two next species of *Harrier* (*C. cineraceus* and *C. rufus*) are also migratory.

28.—*Falco luggur.*

This is undoubtedly the *F. juggur* of Gray, figured in Gray and Hardwicke's Illustrations of Indian Zoology: but, as in this genus the female is considered the noblest of the two, it may perhaps be permitted to retain the appellation of the female in the Indian language which I had bestowed on it; the more so, as no description of it has appeared.

The young bird of the year is entirely dark-brown, except the chin which is white, and the head which has a fawn tinge, more strongly marked in some than others. The future changes of plumage of this falcon consist in the brown of the lower surface being gradually replaced by white from the throat downwards—in the brown of the upper parts assuming a cinereous tinge, and in the fawn colour of the head becoming darker and more rufous.

I have had several of this falcon in my possession trained. It is most usually flown at the crow from the hand, but it is also taught to stoop on partridges, florikins, &c.

29.—*Falco Aldrovandi,* Temminck.—The *Shaheen.*

I was misled by the description of this bird in Griffith's Cuvier (where it is stated to be only ten inches long) to consider it as undescribed. The young bird is dark-brown above, chestnut beneath, marked with brown drops. The colour above darkens on the head, neck and shoulders, at each successive moulting, till it is nearly black, whilst it becomes slaty cinereous on the back and rump. The brown drops gradually disappear from the throat downwards, and the throat

and breast become paler by age, almost white indeed; in a very old bird the chin is pure white.

31.—The *Kestril* disappears from the plains of the Peninsula during the hot weather and monsoon for the purpose of breeding; but on the Neilgherries it is a permanent resident and breeds in clefts of rocks in March and April.

33.—The *Basha* of Indian falconry is undoubtedly, as Mr. Elliot suspected, the European *Sparrow-hawk, Accipiter fringillarius.* I have seen living specimens at Hyderabad, and one now in Mr. Elliot's possession. It is migratory in India, coming in about October and disappearing in February or March. It frequents only the more wooded and hilly districts, and is most numerous towards the north of the Peninsula. Many used to be caught annually near Ellichpoor.

The *Basha* is highly esteemed by native falconers, being very speedy, and it is flown at partridges, quail, courier plovers, &c. &c.

No. 35 of my Catalogue, which I erroneously referred to the European *Sparrow-hawk,* is either the *Besra* of Indian falconry (No. 34 of the Catalogue) or some closely allied species, perhaps, as it was named by one Meer shikar to whom I showed it, the *Khandesra.* It appears to differ from the *Besra* (a male specimen of which I saw at Madras in a state of moult) in its larger size, and in retaining the upper brown plumage, after the lower parts have assumed their transverse markings, while in the one I saw at Madras, said to be in its first moult, the new feathers were dark cinereous or slaty. Are either of these the *Nisus Soloensis* of Horsfield?

No. 36. The specimen of *Goshawk* I procured on the Neilgherries is undoubtedly a new species, differing from the *Baz* in its smaller size. It appears to be the same as one described apparently by Mr. Hodgson in the Bengal Sporting Magazine for 1836, as the *Astur Indicus.*

I have lately procured a specimen of the female of this bird, shot on the Khoondah range of the Neilgherries, and add a few particulars of her size.

Total length 17½; wing 9½; tail 8; tarsus 2½; bill at gape 1 $\frac{2}{10}$.

It has a distinct rather long occipital crest, and the markings of the throat and breast are much more numerous and larger than in the one I formerly procured. Is this bird the *Gorbesra* of Indian falconry?

36. —bis.

The *Astur Palumbarius* or *Baz*, however, may also be enumerated as an Indian bird. It is chiefly found in the more northern parts of Hindostan, in the cold weather only, but stray birds are said to have been found in the Peninsula, and I think I have lately observed it on two or three occasions near the summit of Dodabetta, the highest mountain on the Neilgherries.

The *Baz* is most highly esteemed in India, a trained bird being seldom sold for less than 1000 Rupees. It is flown chiefly at hares, large ducks, and at the *Bustard*. It will readily strike down the common kite and also the white vulture (*Neophron percnopterus*).

79.—*Myophonus Horsfieldii.* I suspect this bird to be one whose note is well known to residents at Coonoor and Kotagherry, and other places on the edges of the hills. It is exactly like a boy whistling, so much so as to deceive you most completely.

123. *Sylvia montana.* This bird is not uncommon on the Neilgherries.

162. *Sturnus contra.* This is the well known *Ablukah* (i. e. *Piet*) of India, which is frequently caged for its song. It is common about Hyderabad.

242. This is the *Merops Athertoni* of Jardine and Selby's Illustrations of Ornithology, the *Nyctiornis ceruleus* of Swainson. Its genuine name, however, appears founded on erroneous information, as it feeds during the day, and the note of the *Bucco viridis,* seems to have been mistaken for that of this bird, which has a loud rolling warble. It pursues insects from its perch on a high tree, seldom returning to the same branch, but wandering from tree to tree. I have very lately procured it at the bottom of the Coonoor pass.

Irides deep ochre yellow; bill dusky, whitish at the base. Legs cinereous green.

285. This I see is the *Columba badia* of Raffles and Wagler; the *Col. capistrata.* of Temminck. I give the dimensions of one I shot lately on the Khoondah Ghaut.

Length 19 inches; breadth 26; girth of body 13; wing 9; tail 7; tarsus $1\frac{3}{10}$; bill at gape $1\frac{3}{10}$; at front 1; weight $1\frac{1}{2}$ lb.

20,—bis.—*Spizaetus punctatus.*—New Species?—*Spotted Spizaetus.*

Descr.—Plumage above glossy, hair brown, each feather pointed with whitish, and the upper tail feathers barred with white. Throat and neck unspotted brown; under surface of the wing coverts, breast, abdomen, leg feathers, and under-tail coverts fawn, barred transversely with brown. Quills glossy purple black, internally silvery grey, mottled and barred with dusky. Tail above glossy purplish-black, obsoletely barred with dusky grey, with a white tip, on its under surface the grey tinge predominates, barred with dusky; cere and feet yellow; bill and claws black; irides brown.

Length $26\frac{1}{2}$ inches; wing $18\frac{1}{4}$; tail $9\frac{1}{2}$; tarsus $4\frac{2}{10}$; mid-toe 1; do. claw 1; outer-toe $1\frac{2}{10}$; do. claw $\frac{8}{10}$; bill slightly bending from the base, nostrils small, obliquely oval; com-

missure straight; bill at gape $2\frac{2}{10}$; at front $1\frac{6}{10}$; 4th and 5th quills equal and longest.

The legs of this *Spizaetus* are more lengthened and less robust than in the *S. milvoides* ; its feet and claws too are proportionally larger, and it differs otherwise in some structural points from that bird, which I would take as typical of this genus, for the *Falco Cristatellus* of Temminck, marked by Swainson under this genus, undoubtedly belongs to Hodgson's genus '*Nisaetus*,' and this to the '*Aquilinæ*,' whereas the *Spizaetus milvoides* and the present subject undoubtedly belong by their small feet and other points to the *Buteonine* family. I procured a single specimen of this beautiful bird in the valley of the Pennar near Laulpett. It was seated on a high tree ; its stomach was quite empty. The colouring of the lower surface of this bird recalls that of the *Teesa* (*Buteo Teesa*), and Mr. Elliot's Meer shikar, to whom I showed it, called it the '*Pharee Teesa*'—i. e. hill *Teesa*.

21.—bis.—*Buteo rufiventer.*—New species ?

Descr.—Above, pale brown ; each feather edged with rufous—especially on the head and neck ; rump and upper tail coverts uniform brown ; tail pale rufous, with narrow brown bars, the last widest ; quills grey-brown, white on the inner web, with brown bars (except at the tip) ; beneath nearly pure white, forming a conscpicuous broad white patch on the centre of the closed wing. Cheeks and throats whitish, each feather centred rufous brown ; rest of plumage beneath a bright rufous or chestnut, barred with white ; thigh coverts darker and not barred.

Irides brown, cere and legs yellow. Length 21 inches ; wing 15 ; tail 8 ; bill at gape $1\frac{4}{10}$; tarsus $3\frac{2}{10}$.

Bill short, slightly bending from base ; commissure very slightly festooned ; legs feathered in front for 1 inch ; a broad

series of scales in front; another behind, separated on either side by 3 rows of small irregularly hexagonal scales; 4—5 large scales at the extremity of each toe; external claw small; internal larger than the centre one, about equal to the hinder one; external digit (without claw) slightly longer than the internal.

Wings reaching nearly to the end of the tail, which is very slightly rounded; 3d, 4th and 5th quills longest and equal; 1st shorter than the 7th.

I shot a specimen of this *Buzzard*, seated on the ground near a small brook and swampy ground on the Neilgherries. It had eaten a lizard. It is somewhat allied in colouring to the *Buteo longipes*. From its plumage I conclude it to be an adult specimen.

21, ter.—*Buteo melanotis*—New species??—*B. albidus?*—*Black-eared Buzzard.*

Descr.—Head and neck above buff, the feather broadly barred with deep brown, and considerably lengthened, forming a large occipital crest, almost as large as in the *Circaetus undulatus*. Back and wing coverts dark brown, each feather edged with rufous. Tail hoary brown, with 3 distinct broad dark brown bars.

Quills brown, with darker bands, and the inner webs white for two thirds of their length, with brown bands. Quills and medial wing coverts, tipped white. Plumage beneath pale whity buff—the feathers of the breast darkest, and centred with brown. Thigh coverts transversely banded with pale brown. Quills and tail beneath hoary grey, with dark bands. Ear coverts and stripe beneath the eyes deep black. Cere and legs pale yellow; bill yellow at base with black tip.

Length 24 inches; wing 16; tail $10\frac{1}{2}$; tarsus $3\frac{8}{10}$; middle digit without claw $1\frac{7}{10}$; hind do. $\frac{9}{10}$; bill at gape $1\frac{7}{10}$. 5th

quill longest. 2d, 3d, and 4th quills nearly graduated; 1st considerably shorter, about equal to the 9th—3d and 6th nearly equal. Bill much bent; commissure almost straight. Tarsus reticulated, with a larger series of scales in front on the upper part of the tarsus only; 4 large scales on the extremities of the toes; tail rounded, 2 inches beyond the wings. This bird differs from the true *Buzzards* in several points, more especially in the structure of its tarsi which are reticulated nearly throughout. Its wings are short, and its bill more abruptly bent. Its feet are moderate and claws small, but considerably curved. Of its habits and food I know nothing. I was favoured by S. Ward, Esq. M. C. S. with the only skin of this bird I have yet seen. It was killed at the foot of the Neilgherries.

29, bis.—*Falco sub-buteo,* L.—The *Hobby.*

I obtained a single specimen of this *falcon* during the cold season in a grove of trees north of Jaulnah. I found its stomach crammed with dragon flies (*Libellulæ*). It was called *Doureylee* by one native falconer, and *Reygee* by another, who said it was only a cold weather visitant in the Peninsula, coming in and disappearing along with the *Bhyree* (*Falco peregrinus*).

42, bis.—*Bulaca Monticola*—New species?—*Neilgherry wood owl.*

Descr. Plumage above dark hair-brown, deepest on the head and neck; medial wing coverts, scapulars, tail and upper tail coverts brown, finely barred with white; face pale rufous brown; disk, mark round the eyes, and chin, lackish brown; throat and narrow line on the lower part of the disk white; lower surface of body rusty white with numerous narrow bars of pale brown; feathers of legs rusty with bars less distinct. Quills barred with dark and light brown; irides deep brown; bill whitish; claws reddish.

Length of male 20 inches, of female 22 inches. Of the latter the wing is 14; tail 9; tarsus 2½; inner claw largest—then the centre one; outer sub-equal to hinder claw; tarsus moderately stout, feathered nearly to the end of the toes—wing rounded; 5th quill longest; 4th nearly equal to it; conch rather small. Disk incomplete above, but strongly marked below.

I have procured this owl lately in the dense woods of the Neilgherries. It is quite nocturnal in its habits.

70, bis.—and 70, ter—Genus *Brachypus.*

I procured two species of *Bulbuls* in the Mysore district bordering the Neilgherries, which appeared to be undescribed, but unfortunately either lost or mislaid them before I had written a description of either. A coloured drawing of both however, was taken by a native painter in Mr. Elliot's service on my arrival on the Hills, and from these I now add a brief description. They were about 6½ or 7 inches in length; the white checked one rather the smallest of the two.

70, bis.—*Yellow-eared Bulbul.*—Above yellowish green, beneath yellow; ocular region black; a plume of soft loose feathers over the ear tipt with yellow.

70, ter.—*White-eared Bulbul*—Above light green, beneath greenish yellow; head, neck and breast dusky grey; ear spot white.

No. 85, bis.—*Turdus varius.*

From specimens I have lately seen and procured through the kindness of S. Ward, Esq., I am induced to think that the bird I procured in the Northern Division and placed as *T. varius* in the Catalogue, will prove another distinct species, probably the *T.* (*Oreocincla*) *parvirostris* of Gould, and that the specimens lately procured on the Neilgherries are those of the true *Tardus varius.* It is by no means a com-

mon bird; frequents thick woods, and has the usual habits of the *Thrush* kind; I add its dimensions for the sake of comparison.

Length 10¾ inches; wing 5 $\frac{2}{10}$; tail 3¾; tarsus 1 $\frac{2}{10}$; bill 1½ at gape.

No. 88, bis.—*Megalurus? striatus.*—New species?

Descr.—Plumage above yellowish brown, each feather centred with deep brown; beneath dirty yellowish white; tail beneath dusky, centred black, and tipped with whitish; bill dusky above, yellowish beneath. Legs flesh coloured! irides deep reddish brown.

Length 7 inches; wing 3 $\frac{4}{10}$; tail 3½; bill at front ½ inch; at gape $\frac{7}{10}$; tarsus 1 $\frac{2}{10}$; mid-toe 1; hind toe $\frac{8}{10}$; bill with 5 strong rictal bristles; 1st quill short; 2d quill equal to 7th; 3d longest; 4th and 5th nearly equal to it.

This bird appears most nearly allied to the genus *Megalurus* of Swainson, but yet does not axactly tally with all the characters given in his Synopsis. Its colouring recalls that of the *Thimalia chataræa,* for which at the first cursory glance I mistook it. I procured a single specimen latley on the Neilgherries. It was shot by a shikaree who said that he found it on bushy ground; its food appeared to have consisted solely of insects.

95, bis.—*Thimalia poioicephala*—New species?—*Small grey-headed Babbler.*

Descr.—Head and neck cinereous; back and rump greenish olive; wings and tail same colour, but darker; beneath dirty yellowish, lightest on chin and throat. Bill dusky yellowish; legs pale fleshy; irides white. Length 5½ inches; wing 2 $\frac{8}{10}$; tail 2½; tarsus $\frac{8}{10}$; bill at front $\frac{4}{10}$; at gape 6½ 10ths.

I procured a single specimen of this bird on the Coonoor Ghaut, in high forest jungle. It was alone, flying from branch to branch and had been feeding on small insects.

96.—bis.—*Thimalia platyura.*—New species?—*Broad-tailed Babbler.*

Descr.—Plumage above dark olive brown, beneath ochrey yellowish; bill yellow horny; legs fleshy yellow; irides yellowish brown; tail feathers obsoletely barred, very broad; 1st and 2d quills graduated; 4th longest; 3d and 5th equal.

Length $5\frac{1}{4}$ inches; wing $2\frac{1}{2}$; tail $2\frac{1}{2}$; tarsus $\frac{9}{10}$; bill at front $\frac{4}{10}$; at gape $\frac{6}{10}$; bill much compressed, plumage very lax.

I was at first inclined to take this little bird for a *Warbler,* but a review of all its characters has induced me for the present to place it among the *Themaliæ.* I procured a specimen in long reedy gress at Goodaloor at the foot of the Neilgherries. It took short flights, and endeavoured to conceal itself among the thick reeds. Its food consisted of insects.

109, bis.—*Phœnicura major.*—New species?—*Large Redstart.*

Descr.—Plumage dark slaty cinereous, except the belly, vent and under tail coverts, which are ochrey yellow; bill black; legs dirty reddish, irides hazel.

Length 7 inches; wing $3\frac{4}{10}$; tail $2\frac{7}{10}$; tarsus $1\frac{3}{10}$; bill at front $5\frac{1}{2}$ 10ths.

This large and stout *Phœnicura* is found frequenting under wood and low trees in the dense woods of the Neilgherries, and descending to the ground to feed. It is a rare bird.

109, ter. —*Phœnicura supersiliaris*—New species?—*White browed Redstart.*

Descr.—Plumage above dark indigo blue; eye streak white, lores and ears black; beneath bright rufous; under tail coverts white; bill dusky; legs pale fleshy. Irides dark brown.

Length nearly 6 inches; wing 3; tail 2; tarsus rather more than 1; bill at front $\frac{5}{10}$; at gape $\frac{7}{10}$.

I have only seen this pretty little *Redstart* very rarely in thick and tangled underwood on the Neilgherries. It has a single low clucking note, like that of some of the *Stonechats*. Its colours are very similar to those of *Musicapa bangarnas*.

No. 154, bis.—*Musicapa rubicola*—Swains?—*Robin Flycatcher.*

I lately procured on the Coonoor Ghaut of the Neilgherries, a *Flycatcher*, which, notwithstanding some slight differences, I am strongly inclined to consider as the '*Robin Flycatcher*,' described by Swainson in his beautiful volume on Flycatchers in the Naturalists' Library.

My bird has the head and neck of a greenish cinereous tinge, the back inclining to olive-brown, and the upper tail coverts and tail of a cinnamon brown hue; throat and breast orange; abdomen and under tail coverts white; bill black; legs pale whitish fleshy.

Length 6¼ inches; wing 3; tail 2 $\frac{4}{10}$; tarsus nearly $\frac{8}{10}$; bill at front rather more than $\frac{4}{10}$; at gape $\frac{8}{10}$. Irides hazel brown.

I may remark that one or two of the feathers of the forehead are slightly tinged with pale blue.

173, bis.—*Spermestes.*—New species—variety of *S. Leuconota?*

I have lately procured a specimen of a small *Finch* which I think can hardly be a young state or variety of *S. leuconota* and I know not if it has been described.

Descr.—Head, neck and back brown; the shafts of the feathers light; upper tail coverts deep-brown; the feathers tipped with glistening yellow (as in *S. nisoria*); wings and tail dark brown; face, forehead, throat and breast deep

brown; abdomen and sides of a reddish fawn or salmon colour; under-tail coverts dark brown with light shafts.

Length 4½ inches; wing 2 $\frac{3}{10}$; tail 1 $\frac{7}{10}$; tarsus $\frac{6}{10}$.

No. 231, bis.—*Centropus Bengalensis,* figured in Brown's Illustrations.

On the authority of Mr. Elliot, I insert this *Cuckoo* as a Peninsular species, that gentleman having observed it in the Southern Mahratta Country.

236, bis.—*Cinnyris longirostris.*—New species?—*Long-billed Honey-Sucker.*

Descr.—Above olive-greenish with a tinge of grey on the forehead and head (the feathers of which parts are scaly), and the rump inclining to yellowish; chin and throat white, changing to bright yellow on the belly; wings and tail dusky brown, the former edged with green and the latter tipped with white; bill dusky; legs brownish cinereous. Irides brown.

Length 5 inches; wing 2½; tail 1½; tarsus $\frac{6}{10}$; mid-toe ½ inch; hind do. ½; bill at front 1 $\frac{4}{10}$.

Judging from analogy this may be the female of some species. I found a single specimen of it in the Mysore district, bordering the Neilgherries.

257, bis.—*Chætura.*—*Spiny tailed Swift.*

Descr.—Head and neck above, wings, tail, and tail coverts glossy green black; back light-brown, chin whitish, vent and under-tail coverts pure white; rest of plumage beneath glossy dark-brown. Spot in front of the eyes white; bill black; legs livid red. Irides deep brown.

Length to end of tail 9¼ inches; wings beyond 2; from flexure 7 $\frac{6}{10}$; tail 2½; tarsus ½; bill at gape 1 inch.

I have seen this very curious *Swift* in vast numbers at the foot of the Neilgherries, both at Metapolliam and Goodaloor. It flies with amazing velocity. As I think it is most likely described, I have not at present ventured to give it a distinct appellation.

260, bis.—*Hirundo urbica,* L. English *Martin.*

I have found this well known European bird, in small numbers, on the South side of the Neilgherries, frequenting a rather lower range of the hills covered with cultivation.

261, bis.—*Hirundo domicola.*—New species ?—*Bungalow Swallow* of the Neilgherries.

Descr.—Forehead, chin, throat and upper part of breast, white deep rufous; plumage above glossy blue black; beneath dusky cenerious; wings and tail dusky black; the latter with a white spot near the tip on all but the two centre feathers. Under tail coverts blackish, edged white. Bill and legs black.

Length $4\frac{3}{4}$ inches; wing $4\frac{2}{10}$; tail (very slightly forked) 2; tarsus $3\frac{1}{2}$ 10ths; bill at front $2\frac{1}{2}$ 10ths; at gape $\frac{5}{10}$; wing $\frac{4}{10}$ beyond tail.

This curiously plumaged little *Swallow* is by no means rare on the Neilgherries, and builds in retired or deserted bungalows, out-houses, &c., making a small mud nest, quite open at the top, and profusely lined with feathers.

262.—*Hirundo unicolor*—On examining fresh specimens of this bird, I find it is a species of *Cypselus* or *Swift,* not a *Hirundo.*

263, bis.—*Hirundo inornata.*—New species ?

Descr.—Above pale ashy brown, darkest on the tail and quills; throat and breast rufous white; abdomen rufous ash colour; under tail coverts ashy brown. A large white spot

on the inner web of all the tail feathers, except the two outer and two centre feathers. Bill black ; legs reddish.

Length to end of tail $5\frac{7}{10}$; wings beyond $1\frac{3}{10}$; from flexure $5\frac{2}{10}$; tail $2\frac{4}{10}$; tarsus $\frac{4}{10}$. Tail nearly square.

I observed this plain coloured *Swallow* at one time in great numbers at Ootacamund, and occasionally in small parties on different parts of the hills, but only in the cold weather.

330, bis.—*Rallus porzana.*

A single specimen of what, from the descriptions I possess, I take to be the *Rallus porzana* of Europe, was procured in a swamp on the Neilgherries in the month of April.

I add its dimensions :—Length 9 inches ; wing $4\frac{1}{2}$; tail 2 ; tarsus $1\frac{4}{10}$; mid-toe $1\frac{6}{10}$; hind-toe $\frac{1}{2}$; bill at front $\frac{7}{10}$ irides brown. Bill yellowish green at the base, and beneath tinged with red ; tip dusky ; legs bright green ; weight $3\frac{1}{4}$ oz.

VII.—*Chantrey's Statue of Sir Thomas Munro.*

To the Editor of the Madras Journal of Literature and Science.

Sir,—It has been suggested to me that a few particulars respecting the Statue of Sir Thomas Munro which has just been erected, would be well received by your readers, and though I have but little to communicate I will trust to the local interest of the subject as sufficient apology for thus intruding myself on your pages.—The first order for the work was given almost immediately after the death of Sir Thomas Munro ; but owing to the numerous engagements which the Sculptor had on hand, it was not commenced till nearly two

years after that period, from which time till its embarkation in April 1838, it may be said to have occupied the chief part of his time and attention. The great object of Sir Francis Chantrey in all works of this nature is to combine simplicity in the outline and drapery with dignity in the attitude and expression: it is only necessary to look at the figure recently erected on the island to be satisfied as to how completely he has here succeeded in attaining this happy union.

The horse may be looked upon rather as the Artist's beau ideal of the animal than as the representation of any particular species, although no doubt the Arab blood will be found to prevail in its composition, and fortunately so when we consider the country where it was to find its final resting place. The pains which Sir Francis took with this part of his task are almost incredible; the whole of the royal stud—then in all its glory—was submitted individually to his inspection—he consulted the best veterinarians—and finally kept it in the model for a space of nearly four years, in order that he might be able to avail himself of any improvements which time or reflection might suggest. The preserving of the clay for so long a period in a proper state of moisture was alone a work of no ordinary difficulty and anxiety, for unless the greatest care be taken, it is sure to bake dry in summer and freeze hard in winter, either of which by distorting the form will in one day ruin the labour of months. When at last however he was completely satisfied, a mould was taken in plaster of Paris, and a cast in the same material took the place of the enormous mass of clay which was immediately broken up to be moulded into other forms.

The horse being thus fixed in somewhat more permanent materials, Chantrey then proceeded to the figure of the rider, which had to be gathered from the most incongruous sources—the chief of which was the admirable portrait by Sir Martin Ar-

cher Shee ; but when we reflect that a painting gives only one point of sight and that a piece of sculpture has to be viewed in every direction, it forms of itself no mean tribute to the Artist's skill, that in a place when every body is familiar with Munro's face and form, not one objection has been raised to the fidelity with which he has caught up the likeness of a man whom he never even saw. The drapery is a happy compound of the ancient and modern, and though perhaps it would scarcely pass muster with the fastidious authorities in the Adjutant General's Office, it is still sufficiently military to satisfy ordinary persons and at the same time not offend the taste of the lovers of the antique, whose prejudices founded as they are in nature must always find favor with a true Artist.

When the whole work was cast in plaster of Paris, the next step was to form moulds of such a material, as would be at once sufficiently fine to preserve the delicacy of the workmanship ; and yet strong enough to bear the heat of melted bronze.—This object is effected by a mixture of brick-dust and plaster in nearly equal proportions, and ten or twelve inches thick. Inside of this again, in order to regulate the thickness of the metal, a *core* was constructed of the same materials and about half an inch smaller in every proportion than the true size of the figure. These moulds when completed were placed in immense ovens and slowly baked dry, for had the slightest moisture remained when the metal was poured in, the mould would have been burst to pieces. In order to ascertain this important point with certainty a small hole was bored into the thickest part of the mould, and some grains of the material extracted, which were immediately placed in a pair of Dr. Wollaston's scales and their weight ascertained with the utmost nicety—they were then exposed to considerable heat and once more put into the scales, after which if their weight was less than on the first trial, it was evident that the mould had still some moisture remaining—

the experiment was repeated till all was thoroughly dry. The mould of the horse was divided into five and that of the rider into three pieces. A pit close to the furnace was then dug sufficiently deep to bury each of these parts—one was placed in it and all around was rammed tight with fine sand leaving two or three runners or channels for the metal to pass through —the bronze entered from below the mould and gradually ascended to the top, had it at once been poured in from above the bronze would have been honey-combed and full of bubbles when allowed to cool. After some time the sand was dug away, and the mould having been broken up, the metal was brought out black and rough—a few days hard rubbing with files and sand paper soon removed this outer coating and left it bright and shining, which appearance in its turn was deadened into its present hue by an application of muriatic acid and potash. The various pieces were joined together in the following manner—half an inch was sawed off the edges of the parts to be connected, and the interior was filled with sand; a small crucible of melted bronze was then prepared and poured along the interval—the heat of this metal was sufficient to make the rims of the solid part become liquid, and when the bronze became cool, the whole was found burned into a solid mass. Though as may be inferred from the above hasty sketch the process is liable to many accidents, I am not aware that more than two failures were made in the whole number of meltings. The sword, the bridle, and the lower part of the tail were also formed in separate castings.

C.

Madras 1840.

VIII.—*On Rain Guages and Registry of River Freshes.*

To the Editors of the Madras Journal of Literature and Science.

Dear Sirs,—I beg the favour of your inserting the accompanying Memoranda in your forthcoming number, not so much on account of their own value as because they may serve to attract attention to a subject which, I think all will agree, is of much interest and importance. The table A of the heights to which some of the chief rivers of the Presidency have risen at different dates, although incomplete, is, I believe, accurate as far as it goes. In future numbers, I hope to be able to supply information of the same kind in which there will be fewer deficiencies. The drawing and Estimate for a cistern rain guage are intended to shew how cheaply and easily one may be constructed of brick and mortar, and of a form so simple that observations of the depth of rain may be made and accurately registered by unscientific natives.—No doubt, most of your readers are acquainted with more perfect kinds of pluviometer, but I shall be excused for occupying this space among your pages with the description of so rude a contrivance, should my doing so be the means of inducing any of them to procure and publish information which but for some hint of the kind, we could hardly expect to obtain.

We are all in the habit of talking and hearing much about the N. E. and S. W. Monsoons, and we have general ideas on the subject of their duration and violence and of the extent of country over which each has influence, but their phenomena are by no means thoroughly understood. We can neither distinctly and correctly trace the line which separates the tract watered by the one from that which chiefly benefits by the other, nor can we yet shew by what gradations the quantity of rain which at Bombay averages 84 inches per annum is diminished as we cross the Peninsula to 50 inches,

the average at Madras. Accounts of these remarkable periodical changes have hitherto been confined chiefly to the direction of the winds along the coast and in the surrounding seas and relate to navigation and hydrography; while particulars of the quantity of rain that falls and of the effects of the Monsoons on the agriculture and climate of the land are few and scattered. In return for the instruction and amusement that we derive from their industrious observations and notices, our friends in Europe have a right to expect to learn from us something definite regarding the wonders of these climates, which we alone have opportunities of seeing, and ought to notice and record for their use as well as for our own. Considering how eminently the European community in India is an educated and scientific one, it is reasonable to hope that our knowledge of subjects interesting to every traveller may be increased materially when it has been shown that much information may be procured at small expense and with very little trouble.

Many returns of great official value now contain allusions to the moderation or excess of falls of rain, to high and low freshes of rivers and their effect upon cultivation and revenue, and it is a question whether it might not be worth while for the State to go to some expense* in order that instead of the

* The first and total expense to Government, if four rain guages were to be built in each District would be 4 × 19 × 14 = Rupees 1064: not much when it is considered how large sums are laid out in promoting enquiries of not greater scientific value and of far less apparent practical utility. The rain guages might be established in the chief towns of the Districts, and the principal Kusbahs of Talooks, where the daily recording of their indications would not occupy a writer five minutes. The observations, if made with regularity, would serve as a check one upon another and no important error could occur if the pluviometer at the principal station were under the immediate charge, and the others under the general superintendence of the Zillah Surgeon.

The cistern rain guage might be made ornamental as well as useful. On one of its vertical faces, a sundial might be figured, on another the standard English

loose, inaccurate accounts† on which the farmers of such reports are now forced to rely, they might procure true records of the seasons, compare them one with another, and judge with confidence the results of administrative measures. Without such records, it may often occur that the good and evil which ought to be attributed to management are laid to the charge of the heavens, the faults of bad assessment and collection washed out by the inundations of a river, oppressive measures paired off with dry seasons, or the merits of a promising new work of irrigation evaporated by the cloudless rays of‡ a July sun or the hot breath of a September land wind.

How little do we now know about the famines which but a few years ago were productive of so much distress in the Northern Circars and elsewhere in this Presidency!! We know that multitudes of men and cattle perished from starvation and thirst; that where in 1830 there were happy people and thriving villages, there are now bare ruined walls, jungle and solitude; that the revenues of this Presidency then received a shock from which several years of good seasons and peaceful Government have not sufficed to recover them:—and this is pretty nearly all that we do know. Is it not possible, or even probable that by more careful observations

measures might be inscribed, on another the distances from neighbouring towns &c. &c. £ 100 laid out in rendering familiar to the people English notions of time and measurement would not be a misappropriation of the funds allotted for educational purposes.

† The natives in this part of India reckon the qauntity of fallen rain in what they call "*puddum*" which signifies the number of finger's breadths to which the water is supposed to have penetrated the earth. They do not take into consideration whether the soil be sandy or clayey, absorbent or retentive of moisture. Tanks are reported to be *half full* or *quarter full* but though accumulations of mud in the bed may have filled up a third or more of the space which formerly contained water, the same time honoured mark continues to point out the *quarter* or *half* tank.

‡ See in the Madras Almanacs what weather *ought* to prevail in July and September.

continued from year to year, we may discover some premonitory indications of these dreadful droughts, and learn in some degree to avert the calamities that attend them? and, if there be but a chance of saving only one hundred lives by means of a trifling degree of fore knowledge, surely, it is worth while to bestow some labour and money in the endeavour to obtain it.

So long as the weather is described merely as being *very hot*, or the rains as *late*, *unseasonable* or *scanty*, we cannot expect much attention to be paid or much knowledge gained. Every hot day seems one of the hottest we ever endured, every heavy pour of rain, especially if we wish to go abroad appears the veriest deluge which ever promised a ducking. Probably in no case is our judgment so apt to be deceived as in comparison of seasons, to estimate which we trust chiefly to the recollection of our past feelings. It would be very different if we had more precise guides. Imagine, for example, that in the year before the famine, our records shewed that only 3 inches rain fell in November, and that the July freshes rose to a height of 12 feet, and that in 1845 the freshes should rise only to 10 feet and the November rains amount to only 2 inches, should we not then begin to anticipate mischief? The merchants would expect high prices in the Districts menaced, grain would be exported to them, and much of the evil of famine would be met by timely supplies.

But I have said enough on a subject which any of your traders can illustrate and on which there can hardly be a diversity of opinion. I will only add, with your permission that until the duty is entrusted to more able hands, I shall be glad to aid in condensing and arranging for publication any papers that this notice may elicit and that I am,

Dear Sirs,

Yours very truly,

S. Best.

Estimate foı a Rain Guage.

	ft.	ins.		ft.	ins.		ft.	ins.	c. ft.	ins.
Outer wall below, ...	14	6	by	1	1½	by	3	0 ..	49	0
Do. do. above, ...	16	0	by	0	9	by	1	0	12	0
Inner do, ...	2	6	by	0	9	by	3	0 ..	5	7½
Floors of cisterns,..........	4	0	by	2	6	by	0	4½....	3	9
								Total Brick work....	70 „	4½

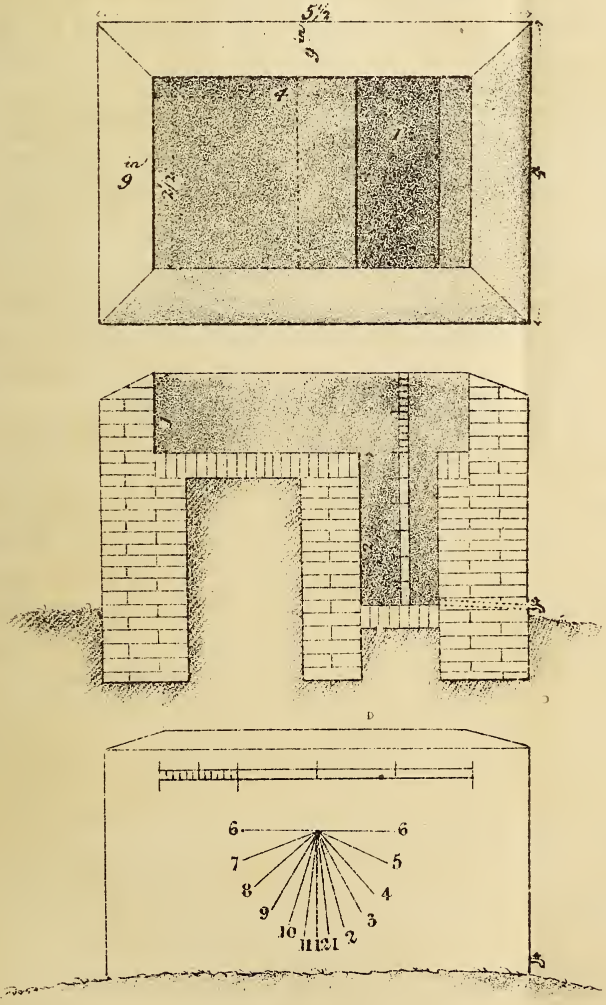
	ft.	ins.		ft.	ins.	sq. ft.	
Plastering	19	0	by	4	0......	76	Total 107 Sq. ft.
	7	0	by	3	0....	21	
	4	0	by	2	6......	10	

	Rs.	A.	P.
70 4½ Cc. ft. Brick work at 2 annas..........................	8	12	9
107 Sq. ft. Plastering at 2½ Rs. per Sq.	2	11	0
Scales and Sundries........	2	8	3
Total Rs. ..	14	0	0

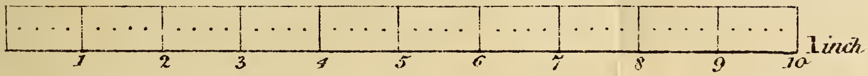
Rules for erecting and recording the Rain guages, intended for translation into the native languages.

The cistern should be built in a spot from which every building and large tree is distant at least 60 feet. It must not be placed on a hill or mound nor yet in a hollow, but on ground of the general level. It should be near to a guard or at any rate in some spot where it will not be mischievously injured, and where it will be convenient for the inspection of the person whose duty it is to make the observations. The cistern should be well built of brick in chunam (allowing for the thickness of plaster), or of cut stone if it can be done within the Estimate. The walls must be perfectly upright and there should be no error in the dimensions. The scales should be fixed in the masonry. They may be of wood or marked in the plaster, or cut in stone or metal, but of whatever material, they must be exact.* No wall more than 2 feet high is to be built around the cistern to protect it, but a ditch or a hedge of thorns, leaving space for one person to go and look at the guage will be useful. The observations should be taken every day and as nearly as may be at the same hour in the morning.

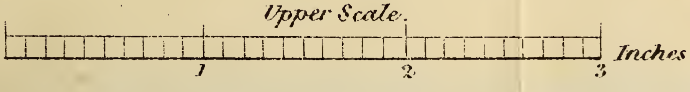
Plan, Section and Elevation of a Cistern Rain Gauge.



Lower Scale for Well.



Upper Scale.



BRITISH MUSEUM

In the small cistern or well, each large division is 4 inches in length, but denotes only one inch of rain. The smaller divisions, each $\frac{4}{10}$ of an inch, shew tenths of an inch of rain, and every one of the smallest divisions, $\frac{4}{50}$ of an inch, shews two hundredths of an inch of rain. The small cistern will hold six inches of rain, which is the greatest quantity that is ever likely to fall in 24 hours; but lest there should be any neglect, the upper part of the cistern is also marked and the whole will shew 18 inches of rain. The cistern ought never to be covered. If dirt collect in it, it must be swept and washed out. The water must be let off and the orifice closed as soon as the depth is entered in the register, which it will be convenient to have made in the accompanying form.

FORM.*

*Rain Guage at*____________________184 .

Months.	Date.	In English figures. Inches	tenths.	parts.	In Native characters. inches.	tenths.	parts.	Name of the Observer.
Total of the Month.								
Daily average.								

* Any vessel that is of the same size from top to bottom will do for a rain guage. The depth may be accurately measured at once, or if the number of square inches in the top surface be ascertained, then if the number of cubic inches of rain that falls in it be divided by these square inches, the quotient will be the depth of rain fallen in inches.

The number of cubic inches may be found by weighing the water, allowing 253¼ grains for each cubic inch. A fluid ounce is 1 Cubic inch and 89¼ hundredths, very nearly 1 Cubic inch and nine tenths.

* Blank Registers of this form printed on writing paper are procurable at the Christian Knowledge Society Press, price 9 as per annual sheet.

Table A of the heights of water in the

	Kistna River at Seetanuggrum.									Goda Raja	
	Maxm.	Mean	Minm.	Maxm.	Mean	Minm.	Maxm.	Mean	Minm.	Maxm.	Mea[n]
	ft. ins.	ft. ins. 1841	ft. ins.	ft. ins.	ft. ins. 1842	ft. ins.	ft. ins.	ft. ins. 1843	ft. ins.	ft. ins.	ft. i[ns.] 1843
June				19. 0	11. 1	9. 0					
July	32. 9	24. 5	13, 8	30. 3	19. 8	14. 0	28. 10	21. 11	14. 0	28. 6	14.
August	33. 9	25. 11	20. 3	32. 0	25. 2	16. 3	28. 6	22. 5	16. 3	29. 6	13. 8
September	25. 0	20. 3	16. 0	32. 9	23. 10	18. 0	29. 3	20. 11	15. 6	31. 0	18. 11
October	19. 3	14. 3	12. 0	22. 6	14. 9	11. 9	29. 0	21. 10	14. 3		
November	21. 6	16. 5	9. 9	15. 6	12. 8	10. 0	14. 0	11, 0	9. 8		
December				10. 9	8. 11	7. 9	10. 2	8. 5	8. 4		
		1842			1843			1844			1841
January	10. 6	7. 7	5. 3	7. 9	7. 4	6, 7	8. 4	7. 7	7. 3		
February	9. 3	7. 4	6. 0	7. 3	6. 10	6. 3	7. 4	7. 2	6. 6		
March				10. 0	7. 3	6. 3	6. 5	6. 1	5. 10		
April				7. 6	6. 3	5. 7	5. 9	5. 4	5. 1		
May				24. 0	10. 4	6. 6	7. 4	5. 7	4. 11		

	Agunda Cauvery at Moosery.			Colleroon Upper Annicut or Dam. South wing wall of the So[uth]								
	Max.	Mean.	Min.	Max.	Mean.	Min.	Max.	Mean.	Min.	Max.	Mean.	Min.
	ft. ins.	ft. ins. 1843.	ft. ins.	ft. ins.	ft. ins. 1840.	ft. ins.	ft. ins.	ft. ins. 1841.	ft. ins.	ft. ins.	ft. ins. 1842.	ft. ins.
[Jun]e........	8. 2	4. 2	2. 0	1. 4	0. 11	0. 3	0. 11	0. 10	0. 10	3. 0	1. 8	0. 6
[July]........	8. 10	6. 2	4. 4	5. 6	3. 2	1. 7	5. 5	3. 9	0. 6	4. 3	2. 3	0. 4
[Aug]ust.......	7. 0	4. 11	3. 9	2. 9	1. 6	0. 5	3. 6	1. 7	0. 1	3. 8	2. 2	0. 2
[Sept]ember...	9. 0	5. 6	4. 0				3. 10	1. 5	0. 1	3. 8	1. 5	0. 2
[Octo]ber.....	7. 6	5. 11	4. 0	1. 4	0. 9½	0. 4	4. 5	1. 11	0. 4	1. 11	0. 10	0. 3
[Nov]ember...	4. 6	2. 11	1. 10	1. 7	1. 2	0. 9	3. 7	2. 3	0. 5	2. 3	1. 4	0. 2

No returns for th[e]

Rivers of the Madras Presidency.

very River at mundry.		Pennaur River at Nellore.			Toombuddra River.				Tambrapoorny River at Palamcotta.		
Mean	Minm.	Maxm.	Mean	Minm.	At Kamply.		At Rampoor.		Maxm.	Mean.	Minm.
ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.		ft. ins.		ft. ins.	ft. ins.	ft. ins.	ft. ins.
1843			1843				1843			1843	
		6. 9	3. 9	2. 3	19th	6. 0	26th	10 10½	8. 0	3. 11	2. 6
14. 6	0. 8	3. 9	1. 3	0. 9	27th	10. 6	26th	9. 0	6. 6	2. 10	1. 0
13. 8	8. 4	3. 3	1. 1½	0. 9	28th	9. 0	30th	7. 6	1. 6	1. 5	0. 10
18. 11	8. 10	10. 6	5. 6	2. 3	27th	10. 6	27th	15. 9	4. 6	2. 8	2. 6
		15. 0	7. 1	3. 9					7. 0	1. 8	0. 9
		6. 0	2. 8	1. 6	30th	3. 0	30th	3. 9	8. 0	3. 1	1. 0
		13. 6	5. 2	1. 1¼					7. 6	3. 7	0. 6
1844			1844							1844	
		9. 9	3. 2	1. 6					5, 0	2. 5	1. 3
		3. 0	1. 7	1. 1½					1. 3	1. 0	0. 9
		0. 0	0. 0	0. 0					1. 0	0. 9	0. 9
		0. 0	0. 0	0. 0					0. 9	0. 7	0. 6
		3. 9	0. 6	0. 0					1. 6	0. 7½	0. 6

of the Southern portion.				Veeranum Tank, above the South Calingulah or Waste weir.			Grand Annicut or Waste weir.			Colleroon Lower Dam. North branch.		
Min.	Max.	Mean.	Min.	Max.	Mean.	Min.	Max.	Mean.	Min.	Max.	Mean.	Min.
ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins.	ft. ins
		1843.			1843.			1843.				
0. 6												
0. 4				0. 6	0· 2¾	0. ½						
0. 2				0. 2	0. 1¼	0. ½						
0. 2				0. 10	0. 4½	0. ¼						
0. 3	1. 11	0. 10½	0. 1	0. 11	0. 6½	0. 4½	2. 5	1. 5⅓	0. 4	2. 11	1. 4	0. 7
0. 2	0. 0	0. 0	0. 0							0. 10	0. 4	0. 1

other months of the year.

IX.—*Effects of the Famine of* 1833.

A correct idea of the nature of the famine, which, with the exception of Tanjore and some other well irrigated tracts, was felt throughout the Presidency may be formed from the accompanying particulars, derived from good authority and referring to the Guntoor District.

Census.

	Population.	Bullocks and He Buffaloes.	Milch Cattle.	Sheep and Goats.
1830-01 1831-32	5,09,365 5,12,317	1,33,684 1,32,763	2,16,755 2,13,140	4,80,940 4,95,158
1832-33 1833-34	3,57,038 2,55,511	64,122 58,503	80,204 53,800	2,58,818 1,69,464
1842-43	3,44,729	1,10,744	1,91,067	5,12,155
Decrease between 31-32 and 33-34	2,56,806	74,260	1,59,340	3,25,694
Increase between 33-34 and 42-43	89,218	52,241	1,37,267	3,42,691
Average annual increase.	9,913	5,804	15,252	38,077
Difference of 31-32 42-43	1,67,588 less	22,019 less	22,073 less	16,997 more

Gross Revenue Collections.				Rain at Masulipatam.		
	Rupees	Less than in 31-32	Average loss.	June to January.	Jany. to June.	Total.
1830-31	18,42,469					
1831-32	18,31,451					
1832-33	9,54,960	8,76,491				
1833-34	13,63,056	4,68,395				
1834-35	8,40,905	9,90,546	7,14,644			
1835-36	12,55,157	5,76,294			5-53	
1836-37	11,49,958	6,81,493		23-88	6-84	30-72
1837-38	12,19,253	6,15,198		31-75	3-01	34-76
1838-39	13,29,343	5,02,108		9-95	11-16	21-11
1839-40	14,24,267	4,07,184		24-60	7-38	31-98
1840-41	14,35,338	3,96,113		18-17	11-38	29-55
1841-42	13,38,120	4,93,331	4,99,609	27-83	5-25	33-08
1842-43	12,47,731	5,83,720		33-29	7-92	41-21
Total loss of Revenue		65,90,873				

These tables give the actual loss of population, agricultural stock and revenue, and the rate at which recovery from these losses has taken place. I have added three columns shewing fall of rain at Masulipatam, which I have obtained through the kindness of Mr. Alexander, the Master Attendant there, a gentleman whose long experience and habits of observation render him an excellent authority in all matters connected with the state of the country in which he has dwelt so many years. Among the deductions that may be made immediately from these records, are, that the revenue levied in Guntoor in 1831 was 3 Rupees 9 $\frac{1}{6}$ Annas per man: in 1842 it is 3 Rupees 9$\frac{1}{12}$ Annas. The number of cattle to each 100 of the population in 1831 was 67 bullocks and cows and 96 sheep and goats. In 1842, it is 87 bullocks and cows, and 145 sheep and goats. The number of milch cattle has trebled between 1833 and 1842 or in 9 years. The increase in the number of bullocks is not so great, but this is to be accounted for by the exportation for sale;—Guntoor being famous for its horned cattle. The number of sheep and goats in the same period of nine years has also trebled itself. But the human population has increased only by 40 per cent, and of

this increase, no doubt, a very large proportion consists of unfortunates, who emigrated during the *famine and fever*-years, and who have since returned to their homes. Among a people so little migratory as the population of a rural district, there is still a deficit of no less than one hundred and sixty seven thousand souls, and we are led to the inevitable conclusion that at least *one hundred and fifty thousand* perished through starvation and disease !*

* This is not an ordinary statistical fact—this is no record of so many millions of yards of cloth exported and so much sugar imported, no detail of so many people clothed and so many palates indulged. Here we read of a body of human beings much larger in number than the whole armies of India, not marching with the prospect of glory, promotion and prize money, but leaving their homes, wandering into strange lands with no excitement but the cravings of hunger and the agonies of thirst. Of these miserable pilgrims, a mass equal to all the Bengal and Madras Armies put together; a number whose corpses laid side by side would closely line both sides of a road 20 miles in length; three times as many as all the British soldiers killed in the Peninsula war; men, women, and children ten times more than the victims of Cabul, died not among shouts and cheering by the quick blow of bullet or bayonet, not in the course of a few nights, frozen to the sleep that ends in death, but by lingering illness and gnawing pangs prolonged for days and weeks.

It is distressing but it may be useful to dwell upon the horrors of these calamitous seasons. We are apt not sufficiently to consider in reading of 150,000 people killed by famine, how much individual wretchedness is indicated by those six digits. We shrink from the six hundred tales of broken up village communities, the uncultivated lands, the uncelebrated feast, the fierce contest at the well, the thronged burning ground, the unburied dead. We like not to contemplate the spectacle presented in thousands and tens of thousands of families, the herdsman with his uncomplaining cattle dying around him, stripping the coarse thatch from his roof in the vain hope of sustaining the lives which for years have been the grateful objects of his care, the sheep burnt to death with the withered grass, the hungry children and their starving parents, the famished mother unable to moisten the parched throat of her dying infant, or the hard struggle between the strong ties of kindred and the stronger instinct of self-preservation.

Let it be remembered that the famine of 1833 was by no means confined to the Guntoor District. Many must have a lively recollection of its disastrous effects in other parts of the Presidency, as well as of the multitudes that came in search of food to Madras itself, where some measure of relief was afforded them.

The sum of the loss of revenue up to 1842 is nearly 66 lacs of Rupees. At the rate of progress hitherto made, it is not to be expected that the District will pay what it did in 1831 for 15 years to come, and the difference during this period will average 3 lacs per annum, and will amount to 45 lacs more. The past and prospective loss in the value of produce, the share of the cultivators and people, cannot be estimated at less than 80 lacs. The value of the cattle that perished was more than 20 lacs, and the loss by the decrease in the exportation of bullocks may be 10 lacs more. On the whole it appears that, altogether independent of the misery that would have been so averted if any human means could have prevented the famine, it would have been worth while to spend *two hundred and twenty one lacs* of Rupees in doing so. I will not pretend to decide how much it is worth while to lay out in attempting to prevent the recurrence of such misfortune. But that a great deal may be done for a sum comparatively insignificant is not a matter of doubt. Let us pray with the people of those famished Districts that before long it may be matter of history.

The Guntoor District is from North to South about 80 miles in extreme length and E. to W. about 116 miles. Its area is about 4700 square miles, and with a population of five lacs there would be about 106 souls to a square mile, which is a little more than the average of the Presidency. On a rough estimate, we may take one-fourth of the country as occupied by hill and jungle, one-fourth by sand and barren ground. Three-eighths are fertile cotton soil, wanting only rain and labour to produce enormous crops of dry grains, especially *cholum* or *jonna* (holcus sorghum.) The remaining

Greater than the charity of relieving will be the charity of preventing, and far more effectual. What the best means of prevention are it is not easy to determine, but it is useless to waste time in discussion—wiser by far to resort at once to such means as are obvious,—and when better plans are suggested to adopt them also.

eighth is alluvial soil of the best kind, which with abundance of water, population and cattle is capable of yielding crops of rice far more plentiful than are to be met in the best parts of Tanjore.*

The Kistna River is the Northern boundary of the District. Its bed is all but dry during the months of March, April and May, but from June to January the freshes vary, the extreme depth being about 35 feet at Bazwarrah and Seetanuggrum, where it emerges from the hills. Its width is there 1160 yards and its velocity not less than 5 miles an hour, so that the quantity of water it discharges *in one hour* is $1\frac{1}{3}$ times the whole *annual* discharge of the Clyde at Glasgow. Unfortunately, but little can be rendered available for irrigation.†

The river's surface at flood falls about $11\frac{1}{2}$ inches per mile between Seetanuggrum and the sea, a distance in its course of $57\frac{1}{2}$ miles. In the dry season, bars of sand prevent the entrance of vessels, but in the freshes large boats drawing 8

* I cannot vouch for the correctness of these divisions but I believe they are not very far from the truth.—If we wait for absolute exactitude, we shall never write at all. I shall b^ happy to have my errors corrected. The Officers who surveyed our provinces drew up statistical reports explanatory of their surveys, in which such particulars as I have given loosely are stated from measurement. These reports unfortunately are not published.

† When the Godavery has shrunk within its dry season limits, along the banks may be seen numerous bullocks employed in raising water for irrigation from the bed, a height of about 20 feet. Nothing of the kind is common in the parts of Guntoor which border the Kistna. People who seldom leave their own villages to go further than the Kutcherry, unless when driven by famine are slow to learn the improved modes of cultivation followed even in neighbouring Districts. There seems no other reason why the same plan should not be common in Guntoor, provided always increased rates of taxation would not interfere with the husbandman's profits.

North of the Kistna, convenient rafts for the passage of small nullahs are made out of two hollowed palmyras and are in common use along the coast road and elsewhere. Every bearer in Madras knows what a *sungady* is, but not one is to be seen from Ongole to Cape Comorin, though palmyras are abundant, rafts are much required, and they might be made as easily in the South as in the North.

or 9 feet water pass up above Condapilly. The depth of the mouth may then be considered about 12 feet giving a fall of 9½ inches per mile for the bed of the river, the country through which it flows having a fall of about 18½ inches per mile in a direct line from Seetanuggrum to the sea at Nizampatam.

In the highest freshes, the Kistna rises to the level of the country on its banks and occasionally it overflows; but the floods, which (though they used to damage the dry grain crops) were of advantage in producing large quantities of inferior rice throughout the tract over which they extended, by the joint operation of natural causes and artificial embankments, have of late years become much less frequent. An attempt has been made to restore this source of fertility by excavating a channel which, branching from the Kistna at Seetanuggrum, strikes out on the low ground about 7 miles to the South and conveys water from the river whenever it rises within 15 feet of the bank.

The width of this channel averages 15 yards, but it might if necessary be increased to 30 or 40 yards. Its cost is about 30,000 Rupees, and this sum, there is good reason to expect, will in a very few years be repaid by the advantages it will afford. But before *full* benefit can be derived from it, it is necessary that several large tanks nearer to the coast be extended and improved, and fitted to reserve the water remaining after the channel has irrigated the country which borders it. Otherwise, this surplus will run into the sea and serve no other purpose than, perhaps, enlarging and deepening the small harbour of Nizamapatam. Laid out in improving the tanks and in providing for their being filled with water from the Kistna, two lacs of Rupees would suffice to secure the full cultivation of about one-third the rice land of Guntoor in all years in which the Kistna freshes averaged 22 feet on the register at Seetanuggrum during 60 days in June, July and

August, and the rain during September, October and November was not less than 10 inches.

We have yet to learn how often such seasons occur.

The remaining two-thirds of the rich alluvial soils of Guntoor are more immediately dependant upon local rains, and of the land suited to rice cultivation there is a large portion which cannot be so employed, its locality not being adapted to the construction of tanks.

There are said to be 5536 tanks in the Guntoor District; 3504 in repair and 2032 out of repair, but of these it would be found that the greater part are very small,—*ponds* for cattle and not *tanks* for irrigation. Of the tanks for irrigation hardly one can be said to be in perfect repair, while of those that are out of repair, perhaps not one in three is capable of useful repair and not one in ten worth the expense of repairing. Some advantage would be derived from putting the best of the tanks into proper order, and here and there constructing new ones, but tanks which are filled by local rains and by the small nullahs and streams which traverse short distances cannot supply irrigation in seasons of drought.

The want of water even in ordinary seasons in some parts of the Guntoor District is very great, and there is too much reason for fearing that there are tracts of some magnitude, where it is all but impossible by any means to obtain in seasons such as 1832-33, sufficient supplies of that first necessary of life.

In the town of Guntoor itself, where the wells are deep and numerous and some of them really magnificent works, (especially one dug out by the convicts under the orders of the justly lamented Mr. Newberry) there is almost annually great scarcity, the water that oozes into wells cut deep in the granite not being enough for the population, and many springs, tolerably abundant before 1832 having since then failed. At

some future date, it may be necessary to abandon Guntoor and approach nearer to the Kistna. The place would be ill suited now for a cavalry station, which it was in days of old.

The number of wells in the District is stated at 8948, of which 6873 are said to be in repair, and 2075 out of repair. Of the latter, a considerable proportion have probably been dug in ill chosen sites and have been abandoned in consequence. Others have been left incomplete for want of funds to finish them. Generally, it would be found that the wells are of small depth, that they penetrate only the softer kind of rock and gravel, and that, when granite was arrived at, the difficulty and expense of piercing it brought the work to a close. There is no ground to hope, nor, indeed, is it fair to expect that the impoverished ryots will now do what was beyond their strength in the days of their prosperity;—yet it seems reasonable to suppose that supplies of water for irrigation, domestic purposes and for cattle might become pretty abundant, if the wells were generally deepened and repaired under judicious arrangements. The only question is, "Where is the money to come from?"

Not that a large sum would be required:—at least not a large portion of the sum lost in the famine. 4 lacs out of the two hundred and twenty one would afford 200 Rupees for the repairs of each of the wells said to be out of repair, besides 50 Rupees for deepening each of those that is called in repair.—2000 cattle-ponds would give one for every village and hamlet; and for 6 lacs, they might all be dug, down to the granite and their sides faced with stone. Another lac would provide a road by which troops might move with moderate celerity from Madras to the frontier, and the spare produce of Guntoor and Nellore might find its way into the other Northern Circars and the Nizam's dominions.

In short, with an expenditure of less than the revenues of

'one year reduced as they now are, many works might be executed, which would be calculated to mitigate at least, perhaps even in great measure to avert, the worst evils of famine from the Guntoor district, which until some such works are carried on to a much larger extent than hitherto, must remain particularly exposed to such misfortunes. So much money laid out in the course of a few years in the district would be of the greatest assistance to the remaining ryots there.—It would enhance the price of the grain which they sell and would enable them with smaller sacrifice to meet the demands of the government.

The intervals between seasons of scarcity do not often exceed twelve years—and it is now between eleven and twelve years since the great famine occurred.—

1818, 1823, 1824, 1832 and 1833 were five years of *famine* in all which the garce of *cholum*, food for about 100 people for one month, cost nearly or more than 200 Rs. and the prices of the inferior grains *cumboo*, *raghy* and *wurugoo* all exceeded 150 Rs. In 1818, the prices were very nearly as high as in 1832. Besides these, it will be observed from an examination of the list of prices annexed which extends from fusly 1219 (A. D. 1808-9) to fusly 1252 (A. D 1841-42) a period of 34 years, the years 1813, 1814, 1817, 1819, 1820, 1821, 1822, 1823, 1825, 1834, have all been *bad* years, in which the garce of inferior grain has been worth 120 Rs. or more. In such years, the poor man can afford food for his family, but nothing else.

Price of Grain per Garce in Guntoor.

Years.	Cholum.			Cumboo.			Raughee.			Varagaloo.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1809-10	106	4	4	83	12	5	75	3	1	86	11	10
1810-11	99	11	6	86	13	1	82	6	6	85	2	10
1811-12	111	12	7	88	15	7	90	10	5	87	13	9
1812-13	137	4	6	117	2	2	108	13	5	115	6	7
1813-14	116	2	0	128	12	3	123	7	0	129	0	4
1814-15	172	12	9	134	11	2	132	8	10	125	6	7
1815-16	142	10	10	117	0	10	109	3	7	108	7	8
1816-17	120	3	3	96	14	3	94	13	6	105	2	10
1817-18	161	14	7	122	6	9	140	11	1	130	1	4
1818-19	221	1	4	192	1	4	184	2	6	176	6	5
1819-20	181	12	5	125	12	0	136	12	5	134	1	4
1820-21	165	13	0	121	12	0	124	13	5	123	13	5
1821-22	157	12	4	134	5	9	129	15	4	124	13	4
1822-23	165	2	8	142	5	1	129	12	0	132	8	0
1823-24	172	0	0	162	10	3	149	15	1	143	9	6
1824-25	177	14	0	194	10	3	157	3	1	157	14	6
1825-26	157	4	2	138	5	4	136	0	7	137	9	10
1826-27	140	11	5	110	11	7	108	5	0	106	8	10
1827-28	98	3	8	112	7	0	77	11	2	75	5	4
1828-29	123	9	2	106	6	9	90	0	8	97	6	4
1829-30	139	10	8	125	5	4	109	15	9	110	7	8
1830-31	127	9	1	94	7	4	89	13	6	89	8	6
1831-32	115	5	10	90	4	7	89	15	8	85	10	10
1832-33	233	11	4	216	10	4	197	14	4	190	0	7
1833-34	272	7	11	228	10	1	218	1	7	222	9	11
1834-35	186	9	7½	163	12	6	143	14	10½	143	0	6¾
1835-36	116	13	7	94	1	9	88	14	6	89	13	8
1836-37	110	13	2	90	11	8	82	13	7	80	15	7
1837-38	100	5	1	79	13	5	77	11	0	73	10	8
1838-39	142	14	0	121	13	5	125	3	9	107	3	7
1839-40	110	0	10	85	7	11	82	2	10	81	11	4
1840-41	93	3	2	74	13	6	72	13	7	71	8	9
1841-42	71	8	0	52	12	5	55	13	3	53	0	2
1842-43	59	11	3	64	12	0	43	10	5	41	15	2

X.—*Observations of the Dip of the Needle in Southern India communicated by Lieutenant Ludlow Engineers.*

The accompanying observations of the Dip of the Needle, being but the commencement of a more extensive series, would hardly be worthy of publication at present, did they not afford a comparison with a set of observations taken about 5 years ago at the same stations by Mr. Taylor.

An inspection of Table No. 2 will shew the Dip observed at the two different periods, the change of Dip in the interval and also the Latitude of the Magnetic Equator deduced from the Formula

$$\tan \delta = 2. \tan. \lambda$$

δ being the Dip and λ the Magnetic Latitude of the place.

The mean change of Dip during the interval of about $5\frac{1}{4}$ years thus appears to be about 34′48″ consequently there must have been an average annual increase of about 6.′6″.

Upon comparing this result however with that obtained from a series of stationary observations taken at Madras during the last $2\frac{1}{2}$ years it would appear to be too large. This series is given in Table 1 and calculating the change of Dip from the observations in corresponding months of successive years we get a mean annual increase of only 2′.5″.

In order that we may form some judgment as to which of these two results is most worthy of credit it will be necessary to state the circumstances under which the observations were severally taken.

The observations made at Madras form an uninterrupted series they were all taken with the same Needle and circle and in the same place. Each monthly result moreover is the mean of 16 observations, 2 being taken on the Tuesdays and Fridays of each week.

The large result on the other hand is deduced from a comparison of 2 different series of observations taken with different Instruments and Needles and under totally different circumstances. Moreover the Needles used in 1838 were certainly inferior to those at present employed and the Magnets used in Magnetising them being of a small size, could not so thoroughly saturate them as the powerful ones now employed.

Under these circumstances I think we may safely conclude that more reliance is to be placed in the smaller result of 2′5″ than in the large one of 6′6″.

That the observations now made are not materially in error is proved by the accordance of the results taken with different circles and Needles.

Thus on the 19th April 1844 the Dip taken with a circle in the possession of Mr. Taylor, (the same used in the observations made in 1843 and 1844) was found to be 7° 25′ 41″ This result being the mean of 4 different Needles. On the same day the Dip found by a different Instrument and Needle (The one always used in the Stationary series) was 7° 26′ 00″ or differing from the other by only a few seconds.

The Dip taken with the last Instrument and Needle on the 16th July 1844 was found to be 7° 27′ 22″. On the following day with another circle belonging to the Magnetic Observatory the mean of 3 needles made it 7° 28′ 33″, differing from the other by a little more than 1′

There is one circumstance arising from a comparison of these two sets of observations which appears worthy of attention. Tracing out the line of the magnetic Equator first from the observations made in 1838, and then from those in 1833 34, we obtain the figures shewn in the accompanying Diagram.

Were we only to regard one of these we might suppose that the devious course of this line was simply owing to errors of observation, but when we come to compare the two we cannot help being struck by their extraordinary similarity which it would be unreasonable to attribute to the effect of accident. The only way by which I can account for it is by supposing that the observations are sensibly effected by local attraction. The observation taken at the Red Hills

when there is an extensive laterite formation, clearly shews that the effect of local attraction is very sensible there. For at this place which is only 7 miles North of Madras, the Dip increasing at the average rate ought to be about 7° 40′ whereas by many careful and accordant observations it was found to be 7° 58′, the Dip at Poonairy a place 10 miles to the North of it being only 7° 54′. This case is perhaps an extraordinary one but I feel convinced that in most places there is an effect produced in this way to a much greater extent than is generally supposed and for which allowance ought to be made. And it may hereafter be an interesting point to determine what effect the Geological formation has upon Magnetic Observations, and whether it may not be possible by means of such observations to throw some light upon the Local Formation.

TABLE No. 1.

Observations of the dip taken at Madras, during the years 1842 1843 *and part of* 1844, *with the same needle.*

	1842.			1843.			1844.		
	°	′	″	°	′	″	°	′	″
January	7	20.	32.7	7	23.	50.3	7	24.	56.2
February	,,	19.	42.	,,	23.	20.1	,,	25.	10.2
March	,,	20.	38.8	,,	23.	29.8	,,	24.	56.2
April	,,	21.	22.6	,,	22.	59.2	,,	25.	54.1
May	,,	23.	08.3	,,	24.	35.3	,,	27.	02.
June	,,	23.	05.3	,,	24.	05.6	,,	28.	46.7
July	,,	22.	56 4	,,	24.	24.9			
August	,,	23.	12.4	,,	25	24 0			
September	,,	22.	22.8	,,	42	41.6			
October	,,	21.	46.1	,,	23	12.			
November	,,	23.	29.1	,,	23	35.9			
December	,,	24.	04.8	,,	24	23.3			

Mean annual increase 2′ 5″

TABLE No. 2.

Place of observation.	Latitude.	Long.	Dip in 1838.	Dip in 1843.	Differenc.	Latitude of Magnetic Equator 1838.	Latitude of Magnetic Equator 1843.	Change.	Remarks.
	North. ° '	East.	+ ° ' "	+	' "	° ' "	° " '	' "	
Poothocottah	10 23	78 53		0 57 00			9 54 29.9		
Tanjore	10 46	79 14		2 1 27			9 45 15.4		
Negapatam	10 46	79 51	1 42 10	2 19 32	37 22	9 54 54.3	9 36 12.3	18 42.0	
Tranquebar	11 01	79 55	2 05 17	2 40 00	34 43	9 58 20.3	9 40 57.4	17 22.9	
Porto Nova	11 29	79 48	3 6 15	3 41 00	34 45	9 55 48.4	9 38 23.2	17 25.2	
Pondicherry	11 54	79 54	4 27 12	5 5 8	37 36	9 40 11.9	9 21 07.9	19 04.0	
Sadras	12 32	80 12	5 31 23	6 7 34	36 0	9 45 55.4	9 27 41.4	18 14.0	
Madras	13 05	80 17	6 50 4	7 24 56	34 52	9 39 14.1	9 21 35.9	17 38.2	
Red Hills	13 10	80 15		7 58 32			9 09 34.1		
Poonairy	13 20	80 16		7 54 00			9 21 52.1		
Goomerapoondy	13 24	80 11		8 9 42	' "		9 17 54.1		
Sooloorpett	13 41	80 3	8 11 17	8 40 10	28 53	9 34 05.9	9 19 25.2	14 40.7	There appears to be some doubt about the former observations at Sooloorpett.
Nailapully	13 52	80 0		9 6 40	0	0	9 16 55.7		
Woogelly	14 00	79 58	8 49 20	9 23 00	33 40	9 33 45.3	9 16 36.	17 09.3	
Goodoor	14 09	79 55		9 36 24	0	0	9 18 45.6		
				Mean.	' " 34 48		Mean.	17 32	

Observations of the Dip of the Needle taken at different stations in Southern India during the month of December 1843 *and January and April* 1844.

Place	Date & Time of Day & temperature.		No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
Poothocottah. Lat. 10° 22′ 50″ N. Long. 78° 52′ 51″ E. Mean Dip 0° 57′ 0″	1843. Dec. 19th.		1	−0°. 13′ +1. 4 +0. 45 +0. 12	−0°. 13′ +1. 5 +0. 45 +0. 12	1°. 7′ 2. 2 1. 48 1. 3	1°. 5′ 2. 4 1. 48 1. 2		Observation taken on a Pillar erected by Mr. Bayly in the Compound of the Rajah's Bungalow. Observer, Lieut. Ludlow, Engineers.
				0. 27	0.27.25	1. 30	1.29.75	0°. 58′. 5	
			2	1. 0 1. 47 1. 55 0. 43	1. 0 1. 45 1. 55 0. 43	−0. 5 +1. 13 +0. 55 +0. 4	−0. 5 +1. 14 +0. 55 +0. 7		
				1.21.25	1.20.75	0.31.75	0.32.75	0°. 56′. 6	
	20th.		1	−0. 8 +0. 45 +0. 44 +0. 16	−0. 6 +0. 40 +0. 45 +0. 11	1. 30 1. 58 1. 48 1. 20	1. 35 1. 56 1. 53 1. 22		
				0.24.25	0.22. 5	1.39. 0	1.41. 5	1°. 1′.81	
	22d.		1	−0. 2 +0. 38 +0. 44 +0. 2	−0. 3 +0. 35 +0. 44 +0. 00	1. 17 1. 52 2. 00 1. 2	1. 16 1. 55 1. 55 1. 7		
				0.20.5	0.19. 0	1.32.75	1.33.25	0°. 56′.37	
			2	0. 58 1. 52 1. 48 0. 45	0. 47 1. 53 1. 49 0. 47	−0. 20 +1. 19 +0. 43 +0. 10	−0. 18 +1. 17 +0. 43 +0. 10		
				1.20.75	1.19. 0	0.28. 0	0.28. 0	0°. 53′.94	
	23d. 6½ A. M. 70°.	L.	1	−1. 28 −0. 55 −0. 37 −1. 47	−1. 35 −0. 59 −0. 44 −1. 45	2. 23 3. 25 3. 42 2. 38	2. 33 3. 31 3. 40 2. 45		
				−1.11.75	−1.15.75	3. 2. 0	3. 7.25	0°. 55′.44	
	7½ A. M. 70°.	L.	2	1. 9 1. 55 1. 57 0. 58	1. 4 1. 50 1. 53 1. 1	0. 4 0 52 0. 54 0. 00	0. 2 0. 58 0. 50 0. 5		
				1.29.75	1.27. 0	0.27. 5	0.28.75	0°. 58′.25	
	9½ A. M. 78°.		1	−0. 15 +0. 49 +0. 39 +0. 6	−0. 13 +0. 44 +0. 41 +0. 4	1. 28 1. 54 2. 03 1. 5	1. 27 1. 58 2. 0 1. 9		
				0.19.75	0.19. 0	1.37. 5	1.38. 5	0°. 58′.69	

Observations of the Dip of the Needle taken at different stations in Southern India during the month of December 1843 *and January and April* 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
	1843. Dec.							On a Masonry Pillar erected by Mr. Bayley in the Compound of the Residency. Observer Lieut. Ludlow Engineers.
Poothocottah.	23d.	1	0. 0	0. 0	1. 17	1. 22		
	11½ A M.		0. 37	0. 32	2. 4	2. 3		
			0. 36	0. 35	1. 57	2. 5		
	85°.		—0. 2	—0. 7	1. 21	1. 19		
			0 17.75	0.15. 0	1.39.75	1.42.25	0°. 58′. 69	
	1 P. M.	2	0. 52	0. 49	0. 17	0. 18		
			1. 35	1. 34	0. 33	0. 36		
	85°.		1. 50	1. 53	1. 15	1. 14		
			0. 40	0. 48	0. 8	0. 7		
			0. 20	0. 21	0. 7	0. 8		
			1. 36	1. 34	0. 32	0. 36		
			1. 50	1. 51	1. 4	1. 3		
			0. 45	0. 44	0. 17	0. 18		
			1.11. 0	1.11.75	0.31.62	0.32. 5	0°. 51′. 72	
Tanjore.	25th.	1	0. 39	0. 41	2. 15	2. 20		
	9 A. M.		1. 48	1. 50	2. 52	2. 50		
Latitude. 10° 46′ N.			1. 25	1. 24	2. 58	3. 4		
	76°. 5		1, 12	1. 8	2. 12	2. 11		
Longitude. 79 14 E. Mean Dip 2° 1′ 27″			1.16. 0	1.15.75	2.34.25	2.36.25	1°. 55′. 56	
	10 A. M.	2	2. 5	2. 6	1. 1	1. 0		
			2. 24	2. 22	1. 52	1. 55		
	80°.		2. 54	2. 53	1. 38	1. 37		
			2. 3	2. 1	1. 7	1. 8		
			2.21. 5	2.20. 5	1.24. 5	1.25. 0	1°. 52′. 87	
	¼ P. M.	L. 2	2. 10	2. 13	0. 49	0. 55		
			2. 56	2. 51	2. 0	1. 55		
	82°.		2. 34	2. 37	1. 25	1. 32		
			2. 13	2. 9	0. 49	0. 55		
			2.28.25	2.27. 5	1.15.75	1.19.25	1°. 52′. 69	
	1¼ P. M.	L. 1	—0. 47	—0. 55	3. 47	3. 44		
			+0. 23	+0. 26	4. 13	4. 6		
	84°.		+0. 3	+0. 10	4. 25	4. 23		
			—0. 44	—0. 40	3. 44	3. 51		
			—0.16.25	—0.14.75	4. 2.25	4. 1. 0	1°. 53′. 06	
Negapatam.	27th.	L. 2	2. 25	2. 30	1. 57	1. 55		
Lat. 10° 46′ N.	7½ A. M.		3. 44	3. 37	2. 21	2. 27		
Long. 79° 51′ E.			3. 14	3. 17	2. 30	2. 34		
Mean Dip 2° 19′ 32″			2. 44	2. 49	1. 19	1. 26		
			3· 1.75	3. 3.25	2. 1.75	2. 5. 5	2°. 33′. 06	

Observations of the Dip of the Needle taken at different stations in southern India during the Month of December 1843, *and January* 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
Negapatam. Mean Dip 2° 19′ 32″	1843. Dec. 27th. 8¼ A. M.	L. 1	0. 2	0. 4	4. 15	4. 23		Observation taken in a shed erected in the garden of Captain Lawford's house. Observer Lieut. Ludlow Engineers.
			0. 33	0. 26	4. 32	4. 41		
			0. 40	0. 45	5. 16	5. 6		
			0. 42	0. 34	4. 21	4. 25		
			0.8.25	0.10.25	4. 3. 6	4.38,75	2°. 23′.31	
	½ P. M.	L. 1	−0. 32	−0. 39	4. 3	3. 57		
			+0. 25	+0. 30	4. 40	4. 47		
			+0. 22	+0. 14	4. 30	4. 28		
			−0. 5	−0. 3	3. 43	3. 50		
			0. 25	0. 0. 5	4.14. 0	4.15. 5	2°. 8′.12	
	1½ P. M.	L. 2	2. 13	2. 17	0. 59	1. 5		
			3. 36	3. 33	2. 38	2. 34		
			3. 3	3. 6	2. 12	2. 18		
			2. 41	2. 45	1. 46	1. 43		
			2.53.25	2.55.25	1.53.75	1.55. 0	2°. 24′.31	
	2¼ P. M.	2	2. 47	2. 43	1. 36	1. 36		
			3. 19	3. 19	2. 20	2. 23		
			3. 25	3. 21	2. 3	2. 1		
			2. 8	2. 5	1. 27	1. 29		
			2.54.75	2.52. 0	1.51. 5	1.52.25	2°. 22′.61	
	3½ P. M.	1	0. 50	0. 52	2. 28	2. 24		
			2. 24	2. 19	3. 17	3. 17		
			2. 38	2. 40	3. 21	3. 26		
			1. 33	1. 28	2. 7	2. 5		
			1.51.25	1.49.75	2 48.25	2. 48.0	2°. 19′.31	
Tranquebar. Lat. 11° 1′ N. Long. 79° 55′ E. Mean Dip 2° 40′ 0″	29th. 7 A. M.	1	1. 32	1. 34	2. 57	3. 3		Observation made in a shed erected in the garden of the country residence of his excellency the Governor. Observer Lieut. Ludlow, Engineers.
			2. 34	2. 31	3. 40	3. 39		
			2. 24	2. 24	3. 32	3. 36		
			1. 55	1. 50	3. 11	3. 8		
			2. 6.25	2. 4.75	3.20. 0	3.21. 5	2°. 43′.12	
	7¾ A. M.	2	2. 43	2. 40	1. 51	1. 50		
			3. 21	3. 22	2. 37	2. 39		
			3. 25	3. 22	2. 23	2. 23		
			3. 2	3. 3	1. 44	1. 46		
			3. 7.75	3. 6.75	2. 8.75	2. 9. 5	2°. 38′.19	

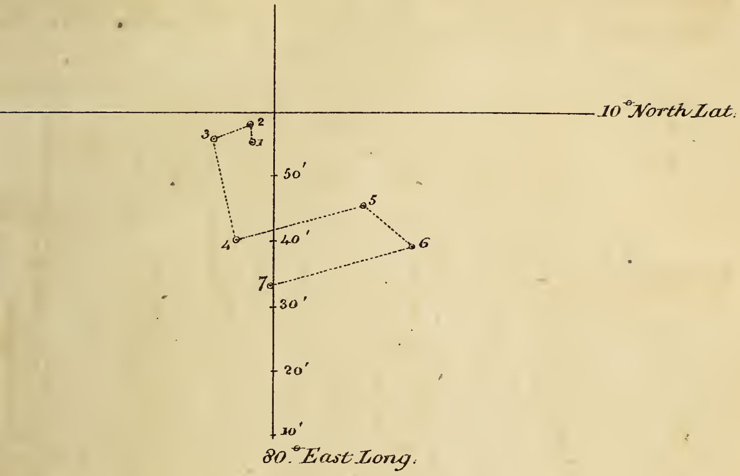
Position of the

Magnetic Equator

deduced from Observations of the Dip

at 7 Stations in

1838.



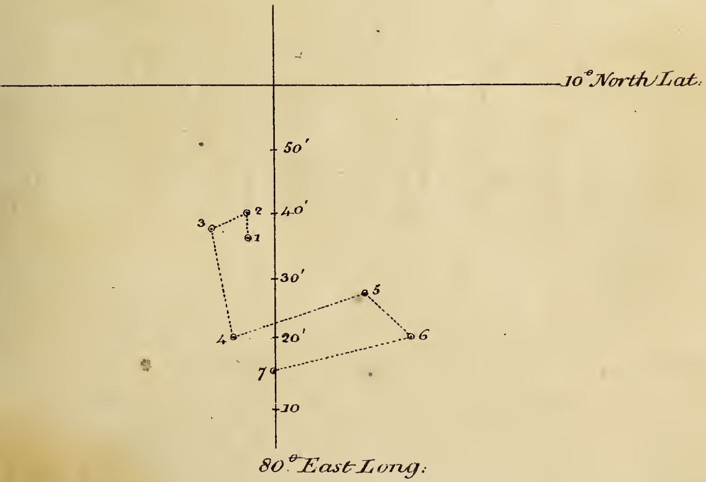
Position of the

Magnetic Equator

deduced from Observations of the Dip

at the same Stations in

1843.



Observations of the Dip of the Needle taken at different stations in southern India during the Months of December 1843, *and January* 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct.		Poles Reversed.		Dip.	
			Readings.	Readings.	Readings.	Readings.		
Tranquebar.	1843. Dec. 29th.	L. 2	3. 4	3. 7	1. 12	1. 17		
Mean Dip 2° 40′ 0″	10½ A. M.		3. 53	3. 47	2. 30	2. 27		
			3. 59	4. 2	2. 1	2. 6		
	81°.		3. 26	3. 20	1. 34	1. 30		
			3.35. 5	3.34. 0	1.49.25	1.50. 0	2°. 42′. 19	
	11½ A. M.	L. 1	0. 6	0. 1	4. 38	4. 35		
	81°. 5		0. 37	0. 41	4. 44	4. 36		
			1. 4	0. 56	4. 57	4. 54		
			0. 4	0. 6	4. 49	4. 56		
			0.27.75	0.26. 0	4.47. 0	4.45.25	2°. 36′. 50	
Portnova.	30th.	1	2. 19	2. 21	3. 57	4. 1		Observation taken in a Temporary shed erected in a field of Mr. Fasciolle near the Botanical garden. Observer Lieut. Ludlow Engineers.
Lat. 11°. 29′. N.			3. 15	3. 10	4. 31	4. 29		
Long. 79°. 48′. E.			3. 19	3. 20	4. 44	4. 50		
Mean Dip 3° 41′ 0″			2. 41	2. 36	3. 58	3. 56		
			2.53. 5	2.51. 5	4.17. 5	4.19. 0	3°. 35′. 37	
		2	3. 51	3. 48	2. 55	2. 55		
			4. 25	4. 24	3. 44	3. 46		
			4. 16	4. 14	3. 46	3. 44		
			3. 47	3. 48	2. 46	2. 49		
			4. 4.75	4. 3. 5	3.17.75	3.18. 5	3°. 41′. 12	
		L. 1	1. 4	0. 55	5. 32	5. 28		
			1. 27	1. 31	6. 23	6. 29		
			1. 47	1. 40	6. 31	6. 27		
			0. 53	0. 54	5. 44	5. 51		
			1.17,75	1.15. 0	6. 2. 5	6. 3.75	3°. 39′. 75	
		L. 2	4. 20	4. 24	2. 7	2. 14		
			4. 30	4. 24	3. 52	3. 49		
			5. 10	5. 13	3. 3	3. 9		
			4. 20	4. 14	2. 59	2. 53		
			4 35. 0	4.33.75	3. 0.25	3. 2. 0	3°. 47′. 75	
Pondicherry.	1844. Jan. 2nd.	L. 2	4. 51	4. 54	4. 18	4. 25		
Lat. 11°. 54′. N.	2¼ P. M.		6. 11	6. 4	5. 12	5. 8		
Long, 79°. 54′. E.			6. 4	6. 5	4. 25	4. 33		
Mean Dip 5° 5′ 8″	87°.		5. 30	5. 25	4. 17	4. 16		
			5.39. 0	5.37. 0	4.33. 0	4.35. 5	5°. 6′. 12	

Observations of the Dip of the Needle taken at different stations in Southern India during the month of January 1844.

Place.	Date & Time of Day & temperatue.	No. of the Needle.	Poles Direct.		Poles Reversed.		Dip.	
			Readings.	Readings.	Readings.	Readings.		
	1844. Jan.							Observation taken in the Verandah of Mr. Heath's Bungalow. Observer Lieut. Ludlow Engineers.
Pondicherry.	2d.	L. 1	2. 33	2. 25	7. 1	6. 56		
Mean Dip 5° 5′ 8″	2¾ P. M.		3. 12	3. 15	7. 58	8. 7		
			3. 16	3. 8	7. 38	7. 36		
	87°.		2. 6	2. 7	7. 7	7. 14		
			2.46.75	2.43.75	7.26. 0	7.28.25	5°. 6′. 19	
	3¾ P. M.	2	5. 10	5. 7	4. 4	4. 5		
			6. 14	6. 12	4. 52	4. 47		
	85°.		5. 43	5. 38	4. 38	4. 39		
			5. 36	5. 37	4. 17	4. 14		
			5.40.75	5.38. 5	4.27.75	4.26.25	5°. 3′. 31	
	4½ P. M.	1	3. 53	3. 45	5. 11	5. 16		
			5. 11	5. 5	5. 53	5. 53		
	84°.		5. 9	5. 11	5. 58	6. 4		
			4. 10	4. 6	5. 28	5. 27		
			3. 53	3. 54	5. 14	5. 10		
			4. 40	4. 36	6. 3	6. 5		
			4. 44	4. 43	5. 44	5. 49		
			4. 9	4. 5	5. 25	5. 23		
			4.28.62	4.25.62	5.37. 0	5.38.37	5°. 2′. 4	
	5½ P. M.	2	5. 23	5. 19	4. 18	4. 17		
			6. 24	6. 23	4. 41	4. 44		
	83°.		6. 7	6. 3	4. 42	4. 42		
			5. 18	5. 18	4. 17	4. 21		
			5.48. 0	5.45.75	4.29. 5	4.31. 0	5°. 8′. 62	
	3d.	1	4. 3	4. 4	5. 52	5. 57		
	9¼ A. M.		4. 40	4. 34	6. 13	6. 14		
			4. 46	4. 46	5. 58	6. 5		
	76°.		4. 6	4. 1	5. 14	5. 12		
			4.23.75	4.21.25	5.49.25	5.52. 0	5°. 6′. 56	
	10½ A. M.	2	5. 24	5. 21	4. 25	4. 26		
			5. 44	5. 44	4. 49	4. 48		
	81°. 5		5. 37	5. 34	4. 46	4. 47		
			5. 22	5. 23	4. 21	4. 24		
			5.31.75	5.30. 5	4.35.25	4.36.25	5°. 3′. 44	
	2 P. M.	L. 1	2. 14	2. 6	7. 4	6. 59		
			3. 16	3. 19	7. 18	7. 27		
	84.°		3. 3	2. 55	7. 55	7. 53		
			3. 32	3. 35	6. 48	6. 56		
			3. 1.25	2.58.75	7.16.25	7.18.75	5°. 8′. 75	

Observations of the Dip of the Needle taken at different station in southern India during the Month of January, 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
	1844. Jan.							
Pondicherry.	3rd. $2\frac{1}{2}$ P. M.	L. 2	4. 57	5. 0	3. 56	4. 3		
			5. 54	5. 45	5. 55	5. 52		
			5. 57	5. 58	4. 35	4. 43		
			4. 56	4. 52	4. 9	4. 7		
			5. 26.0	5.23.75	4.38.75	4.41.25	5°. 2′.44	
Sadras. Lat. 12°. 32′ N. Long. 80°. 12′ E. Mean Dip 6° 7′ 34″	4th. 5 P. M.	L. 2	6. 17	6. 21	4. 49	5. 5		
			7. 6	6. 58	6. 15	6. 12		
			7. 15	7. 16	5. 34	5. 42		
			6. 19	6. 14	5. 14	5. 18		
			6.44.25	6.42.25	5.28. 0	5.34.25	6°. 7′.19	
	5th. 8 A. M.	L. 2	5. 59	6. 5	5. 3	5. 7		Observation taken in a shed erected on the plain near the public Bungalow. Observer Lieut. Ludlow, Engineers.
			6. 51	6. 43	6. 10	6. 7		
			6. 34	6. 30	5, 49	5. 56		
			6. 35	6. 31	5. 16	5. 18		
			6.29.75	6.27.25	5.34. 5	5.37. 0	6°. 2′.12	
		L. 1	3. 38	3. 33	8. 8	8. 14		
			4. 13	4. 15	8. 21	8. 29		
			4. 28	4. 21	8. 44	8. 45		
			3. 40	3. 43	8. 3	7. 56		
			3.59.75	3.58. 0	8.19. 0	8.21. 0	6°. 9′.44	
		L. 1	3. 26	3. 17	8. 5	8. 0		
			4. 29	4. 32	8. 39	8. 48		
			4. 12	4. 4	8. 50	8. 48		
			3. 31	3. 35	8. 5	8. 12		
			3.54. 5	3.52. 0	8.24.75	8.27. 0	6°. 9′.56	
	10 A. M.	1	4. 55	4. 56	6. 22	6. 26		
			6. 9	6. 4	6. 58	6. 57		
			5. 30	5. 31	6. 57	6. 58		
			5. 19	5. 15	6. 28	6. 26		
			5.28.25	5.26. 5	6.41.25	6.41.75	6°. 4′.44	
		2	6. 31	6. 28	5. 14	5. 13		
			7. 4	7. 3	5. 57	6. 1		
			7. 4	7. 0	6. 5	6. 4		
			6. 8	6. 11	5. 41	5. 43		
			6.41.75	6.40. 5	5.44.25	5.45.25	6°. 12′.94	

Observations of the Dip of the Needle *taken at different stations in southern India duriug the Month of January and April* 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles eversed. Readings.	Poles eversed. Readings.	Dip.
	1844. Jan.						
Sadras.	5th.	1	5°. 17′	5. 18	6. 24	6. 28	
			5. 56	5. 51	6. 51	6. 51	
			5. 46	5. 46	7. 3	7. 8	
			5. 4	5. 7	6. 28	6. 27	
			5.30.75	5.30. 5	6.41. 5	6.43. 5	6°. 6′. 56
		2	6. 26	6. 23	5. 23	5. 23	
			6. 52	6. 53	6. 12	6. 8	
			6. 54	6. 49	5. 51	5. 51	
			6. 19	6. 18	5. 15	5. 18	
			6.37.75	6.35.75	5.40.25	5.40. 0	6°. 8′. 44
Red HIlls.	Apr. 5th	1	7. 30	7. 35	8. 48	8. 48	
Latitude 13° 10′	7½ A .M.		7. 31	7. 35	8. 46	8. 44	
Longitude 80° 15′			7. 11	7. 8	8. 22	8. 22	
Mean Dip 7° 59′ 32″			7. 9	7. 5	8. 22	8. 22	
			7. 2	7. 4	8. 16	8. 11	
			7. 0	7. 0	8. 17	8. 13	
			7. 48	7. 45	8. 45	8. 42	
			7. 49	7. 46	8. 45	8. 42	
			7.22. 5	7.22.25	8.32.62	8.30. 5	7°. 56′. 97
	8½ A. M.	2	8. 35	8. 35	8. 2	8. 3	
			8. 36	8. 36	8. 5	8. 6	
			7. 59	7. 58	7. 5	7. 5	
			7. 55	7. 54	7. 1	7. 0	
			8. 3	7. 58	8. 9	8. 5	
			8. 5	8, 0	7. 49	7. 47	
			8. 48	8. 50	7. 7	7. 7	
			8. 54	8. 50	7. 11	7. 11	
			8.21.88	8.20.12	7.33.62	7,33. 0	7°. 57.′15
	4¾ P. M.	2	8. 41	8. 38	7. 5	7. 10	
			8. 41	8. 38	7. 4	7. 0	
			8. 0	8. 2	8. 4	8. 4	
			8. 6	8. 8	8. 12	8. 12	
			7. 52	7. 48	8. 12	8. 11	
			7. 50	7. 46	8. 15	8. 14	
			8. 46	8. 49	7. 2	7. 2	
			8. 42	8. 55	7. 9	7. 8	
			8.21. 0	8.20. 5	7.37.88	7.37.62	7°. 59′. 25
	5¾ P. M.	1	7. 42	7. 45	8. 47	8. 44	
			7. 33	7. 36	8. 45	8. 44	
			7. 25	7. 25	8. 15	8. 18	
			7. 23	7. 23	8. 16	8. 18	
			6. 58	7. 0	8. 10	8. 6	
			6. 53	6. 55	8. 16	8. 11	
			8. 3	8. 2	8. 58	8, 58	
			8 3	8. 2	8. 55	8. 55	
			7.30. 0	7.31. 0	8.32,75	8.31.75	8°. 1′. 37

Observation taken on the wooden pillar stand in the Tent near the bank of the Tank at Lawyer Teed's Garden.
Observer R. Ramanjooloo Naidoo.

Observations of the Dip of the Needle taken at different stations in southern India during the Month of April 1844.

Place.	Date & Time of Day & temperature.	No. of the Needles.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
	1844.							
Red Hills.	Apr. 6th 7½ A. M.	1	7. 30	7. 32	8. 52	8. 49		
			7. 14	7. 12	8, 20	8. 21		
			6. 52	6. 54	8. 16	8. 13		
			7. 42	7. 40	9. 0	9. 5		
			7.19. 5	7.19. 5	8.37. 0	8.37. 0	7°. 58′. 25	
	9 A. M.	2	8. 43	8. 43	8. 3	8. 2		
			8. 2	8. 2	7. 0	7. 0		
			7. 48	7. 44	7. 22	7. 25		
			8. 53	8. 57	7. 5	7. 59		
			8.21. 5	8.21. 5	7.34.25	7.34.25	7°. 57′. 88	
	4½ P. M.	1	7. 43	7. 45	8. 50	8. 46		
			7. 13	7. 13	8. 35	8. 35		
			6. 45	6. 42	8. 32	8. 29		
			7. 40	7. 36	9. 5	9. 6		
			7.20.25	7.19.00	8.45.50	8.44.00	8°. 2′. 18	
	5¼ P. M.	2	8. 21	8. 21	7. 27	7. 23		
			8. 50	8. 47	8. 5	8. 6		
			8. 47	8. 45	7. 47	7. 44		
			7. 57	7. 54	7. 19	7. 20		
			8.28.75	8.26.75	7.39.50	7.38.25	8°. 3′. 31	
Poonary. Lat. 13°. 20′. N. Long. 80°. 16′, E. Mean Dip 7° 55′ 0″	Apr. 9th 7½ A. M.	1	7. 35	7. 38	8. 15	8. 15		Observation taken in a Tent pitched in a Tope near the choultry. Observer R. Ramanjooloo Naidoo.
			7. 9	7. 3	8. 55	8. 53		
			7. 10	7, 8	8. 27	8. 25		
			7. 47	7. 44	8. 40	8. 42		
			7.25.25	7.23.25	8.34.25	8.33.75	7°. 59′.12	
	8½ P. M,	2	8. 22	8. 21	7. 12	7. 10		
			8. 45	8. 42	7. 45	7. 42		
			8. 0	7. 58	7. 55	7. 50		
			8. 50	8. 52	7. 12	7. 18		
			8.29.25	8.28.25	7.31. 0	7.30. 0	7°. 59′.62	
	4½ P. M.	2	8. 10	8. 6	7. 21	7. 17		
			8. 30	8. 30	7. 45	7. 45		
			8. 0	8. 0	7. 50	7. 45		
			8. 50	8. 50	7. 15	7. 17		
			8.22. 5	8.22. 5	7.32.75	7.31. 0	7°. 57′.19	
	5½ P. M.	1	7. 43	7. 42	8. 42	8. 42		
			7. 00	7. 0	8. 22	8. 22		
			7. 42	7. 42	8. 45	8. 47		
			7. 12	7. 15	8. 10	8. 6		
			7.24.25	7.24.75	8.29.75	8.29.25	7°.57′. 0	

Observations of the Dip of the Needle taken at different stations in Southern India during the months of January and April 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
Poonary.	1844. April 10th. 7½ A. M.	1	7. 6 7. 41 7. 35 6. 54	7. 0 7. 41 7. 34 6. 56	8. 14 8. 41 8. 47 8. 7	8. 15 8. 36 8. 51 8. 4		
			7.19. 0	7.17.75	8.27.25	8.26.5	7°. 52′. 62	
	8½ A. M.	2	8. 5 8. 26 8. 47 7. 49	8. 3 8. 23 8. 47 7. 54	7. 15 7. 42 8. 1 6. 56	7. 10 7. 45 7. 58 6. 54		
			8.16.75	8.16.75	7.28.5	7.26.75	7°. 52′. 16	
	9¾ A. M.	L. 1	5. 24 5. 21 5. 43 5. 4	5. 28 5. 16 5. 47 5. 0	10. 33 10. 25 10. 34 9. 45	10. 25 10. 29 10. 31 9. 50		
			5. 23	5.22.75	10.19.25	10.18.75	7°. 50′. 7	
	3 P. M.	O. L.* 2	7. 2 7. 22 7. 40 7. 5	7. 4 7. 28 7. 45 7. 7	8. 13 8. 42 8. 39 8. 2	8. 17 8. 45 8. 42 8. 2		* This Observation was taken with a different Needle
			7.17.25	7.21	8. 24	8.26. 5	7°. 52′. 18	
	4½ P. M.	1	7. 20 7. 32 8. 0 6. 55	7. 18 7. 30 7. 57 6. 58	8. 3 8. 40 8. 37 8. 11	8. 3 8. 37 8. 40 8. 8		
			7.26.75	7.25.75	8.22.75	8. 22	7°. 54′. 32	
	5½ P. M.	2	8. 10 8. 25 8. 34 7. 52	8. 8 8. 27 8. 36 7. 48	7. 40 7. 47 7. 35 7. 25	7. 36 7. 50 7. 35 7. 23		
			8.15.25	8.14.75	7.36.75	7. 36	7°. 55′. 68	
Goomerapoondy Latitude. 13° 24′ N. Longitude. 80 11 E. Mean Dip 8° 10′ 42″	29th.	1	7. 55 7. 00 7. 10 8. 0	7. 50 7. 5 7. 10 8. 5	9. 10 8. 15 8. 25 9. 10	9. 15 8. 15 8. 30 9. 5		Observed by T. G. Taylor Esq.
			7.31.25	7.32. 5	8. 45.0	8.46.25	8°. 8′. 75	
		2	9. 0 8. 5 8. 20 9. 10	9. 5 8. 10 8. 20 9. 15	8. 5 7. 15 7. 20 8. 15	8. 5 7. 15 7. 25 8. 20		
			8.38·75	8.42.5	7.43.75	7.46.25	8°. 12′. 82	
		L. 1	7. 10 6. 15 6. 15 6. 50	7. 10 6. 10 6. 15 6. 55	10. 10 9. 20 9. 15 10. 10	10. 15 9. 10 9. 10 10. 10		
			6.37. 5	6.37.5	9.43.75	9.41. 25	8°. 10′. 0	

Observations of the Dip of the Needle taken at different stations in Southern India during the month of April 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
	1844. April.							
Goomerapoondy.	29th.	L. 2	7. 40	7. 45	9. 40	9. 40		
			6. 50	6. 50	8. 45	8. 45		
			6. 40	6. 40	8. 40	8. 40		
			7. 45	7. 40	9. 35	9. 35		
			7.13.75	7.13.75	9.10. 0	9.10. 0	8°. 11′.87	Taken in the Verandah of the Public Bungalow observed by T. G. Taylor Esq.
Shooloorpet.	24th.	1	8. 10	8. 10	10. 15	10. 15		
Lat. 13° 41′ N.			7. 20	7. 20	8. 45	8. 50		
Long. 80° 3′ E.			7. 40	7. 40	8. 25	8. 25		
Mean Dip 8° 41′ 10″			8. 20	8. 20	10. 00	10. 5		
			7.52. 5	7.52. 5	9.21.25	9.23.75	8°. 37′. 5	
		2	9. 30	9. 30	8. 35	8. 50		
			8. 40	8. 45	7. 55	8. 00		
			8. 40	8. 45	7. 40	7. 45		
			9. 25	9. 30	8. 25	8. 20		
			9. 3.75	9. 7. 5	8. 8.75	8. 8.75	8°. 37′.18	
		L. 1	7. 55	7. 50	10. 20	10. 15		
			7. 10	7. 10	9. 45	9. 45		
			7. 15	7. 20	9. 25	9. 25		
			8. 00	8. 5	10. 25	10. 30		
			7.35.	7.36.25	9.58.75	9.58.75	8°. 47′.18	
		L 2	8. 20	8. 25	10. 20	10. 15		
			7. 25	7. 20	8. 40	8. 45		
			7. 35	7. 40	9. 15	9. 15		
			8. 15	8. 10	9. 55	9. 50		
			7.53.75	7.53.75	9.32. 5	9.31.25	8°. 42′.82	
Nailapeelly.	27th.	1	9. 25	9. 20	10. 20	10. 20		
Lat. 13° 52′ N.			8. 10	8. 10	9. 25	9. 25		
Long. 80° 0′ E.			8. 15	8. 10	9. 30	9. 30		
Mean Dip 9° 7′ 40″			8. 40	8. 40	10. 20	10. 20		
			8.37.50	8.35.	9.53.75	9.53.75	9°. 15′. 0	Observed by T. G. Taylor Esq.
		2	10. 25	10. 25	8. 50	8. 45		
			9. 20	9. 20	7. 35	7. 30		
			9. 10	9. 15	7. 55	7. 55		
			10. 20	10. 15	8. 55	8. 55		
			9.48.75	9.48.75	8.18.75	8. 15	9°. 3′. 13	
		L 1	8. 25	8. 25	10. 35	10. 30		
			7. 20	7. 20	9. 45	9. 50		
			7. 25	7. 20	10. 00	9. 55		
			8. 20	8. 25	10. 40	10. 45		
			7.25. 5	7.52. 5	10.15.	10.15	9°. 3′. 57	
		L 2	8. 25	8. 20	10. 45	10. 45		
			8. 00	7. 55	9. 45	9. 40		
			7. 50	7. 50	9. 35	9. 35		
			8. 45	8. 45	10. 10	10. 15		
			8.15	8.12. 5	10.3.75	10.3.75	9°. 8′. 75	

Observations of the Dip of the Needle taken at different stations in southern India during the Month of April 1844.

Place.	Date & Time of Day & temperature.	No. of the Needle.	Poles Direct. Readings.	Poles Direct. Readings.	Poles Reversed. Readings.	Poles Reversed. Readings.	Dip.	
Voogelly.	1844. April. 25th.	1	8. 55	8. 55	10. 15	10. 15		Taken in the Verandah of the Public Bungalow by T. G. Taylor Esq.
Lat. 14° 0' N.			8. 15	8. 20	10. 00	10. 5		
Long. 79° 58' E.			8. 00	7. 55	9. 25	9. 25		
Mean Dip 9° 24' 0"			9. 25	9. 30	10. 20	10. 20		
			8.38.75	8. 40	10. 0.	10.1.15	9°. 20'. 0	
		2	10. 15	10. 10	9. 15	9. 10		
			9. 20	9. 20	8. 50	8. 50		
			9. 25	9. 30	8. 5	8. 10		
			10. 25	10. 20	9. 30	9. 30		
			9.51.25	9. 50.	8.55.	8.55.	9°. 22'.82	
		L. 1	8. 20	8. 25	11. 15	11. 20		
			7. 30	7. 30	10. 25	10. 15		
			7. 45	7. 45	10. 20	10. 25		
			8. 35	8. 35	11. 35	11. 30		
			8. 2.50	8. 3.75	10.53.75	10.52.5	9°. 28'.12	
		L. 2	8. 45	8. 45	10. 55	10. 50		
			8. 10	8. 10	9. 50	9. 55		
			8. 15	8. 20	9. 55	10. 00		
			8. 50	8. 50	10. 35	10. 35		
			8. 30	8.31.25	10.18.75	10.20.	9°. 25'. 0	
Goodoor.	26th.	1	9. 45	9. 40	10. 40	10. 45		Taken in the Verandah of the Public Bungalow by T. G. Taylor Esq.
Lat. 14° 9' N.			8. 40	8. 40	9. 40	9. 40		
Long. 79° 55' E.			8. 50	8. 50	9. 50	9. 45		
Mean Dip 9° 37' 24"			9. 30	9. 25	10. 20	10. 20		
			9.11.25	9.8.75	10.7.5	10.7. 5	9°. 38'.75	
		2	10. 50	10. 55	9. 35	9. 30		
			9. 40	9. 40	8. 50	8. 50		
			9. 40	9. 40	8. 30	8. 35		
			10. 30	10. 35	9. 30	9. 35		
			10. 10	10.12.5	9. 6.25	9. 7. 5	9°. 39'. 6	
		L. 1	8. 20	8. 20	11. 30	11. 30		
			7. 55	7. 50	10. 35	10. 35		
			7. 50	7. 45	10. 25	10. 30		
			8. 30	8. 25	11. 30	11. 30		
			8. 8.75	8. 5.0	11. 0. 0	11. 1.25	9°. 33'.75	
		L 2	9. 20	9. 20	10. 40	10. 45		
			8. 20	8. 20	10. 00	10. 10		
			8. 30	8. 35	10. 00	10. 00		
			9. 10	9. 15	10. 50	10. 50		
			8. 50	8. 52.5	10.22.5	10.26.25	9°. 37'.82	

XI.—*Notices.*

Pondicherry Fossils.—The specimens taken home by Mr. Kaye from Varadoor, Verdachellum, &c. were exhibited to the Geological society during the course of last summer and pronounced " to be a splendid collection. Prof. Forbes called it an enormous addition to the Fauna, of the most beautiful forms and of the most interesting period. When they were first seen they were supposed to be upper cretaceous and even to contain a mixture of tertiary forms and as it was just at that time a subject of much discussion whether there was any passage between the chalk and tertiary rocks, the Pondicherry beds were by many supposed to form the link. Subsequently however they were discovered to belong to the lower green sand and Neocomien. The neocomien beds are known certainly to exist only in the south of France, and there are none of the fossils in England, but Professor Forbes has compared mine with the beautiful engravings of the French geologists and has identified several of the *ammonites* and some of the singular forms, which for want of a better name we used to call *hamites*, with these French fossils: they are the lowest bed of the green sand, or between the green sand and the Oolite and the Indian fossils became doubly interesting from the fact that just as I brought them before the meeting, the existence of these neocomien beds in England was a subject of keen debate." *Extract of a letter dated October* 1843.

In a notice of the sitting of the Geological Society on the 31 January, it is stated that the Pondicherry fossils are nearly all new forms whence the bed is considered to belong to the lowest part of the lower green sand, whilst from the occurrence of many well known green sand specimens in the Verdachellum and Trichinopoly deposits they have been referred to the upper green sand. In this report (by the curator) 156 new species of mollusca are described and named. *Athenæum.*

A Subsequent letter dated in March last states:

" Our fossils have lately attracted still more attention than before. At the anniversary meeting this year they were almost the only things on the table and formed one of the main topics of the President's speech. A long report on them was also read by Professor Forbes the curator of the museum, and there seems now to be little doubt left that the Trichinopoly and Verdachellum beds are of nearly the same age and are contemporaneous with our English green sand. There are several shells common to Trichinopoly and Verdachellum and which are quite identical with fossils of the green sand. The Pondicherry beds are lower than these,

and come nearest to what the French called the *Neocomien* beds the word is derived from Neocomiensis—Neufchatel—because they are principally developed there."

"They are the lowest beds of the green sand, and I believe we have not their exact equivalents in England. They abound in beautiful and peculiar ammonites and a great variety of those fossils which we used to call *hamites* but which have various other denominations such *ptycoceras, ancyloceras,* &c. &c. not intelligible to you without specimens: the French have published beautiful but rather imaginative drawings of these fossils, some of which our specimens will I believe correct. Professor Forbes has nearly completed his list of these fossils: naming and describing them and the President is anxious to have them published as soon as possible. Another circumstance has given our collections an interest: that is, the great abundance of *volutes* (of which there are nearly 10 species) and the presence of the *cypræa, cerithium* and one or two other shells (which have hitherto been thought almost peculiar to the tertiary beds) in formations of such great age. This circumstance affects several geological theories of importance. There was one very valuable specimen in your Verdachellum set. It was the bones of an *ophiura* or starfish which Professor Forbes says is the best preserved specimen he ever saw from the cretaceous beds."

Discovery of Roman Coins in the Coimbatore District.—In the month of May 1842 after a heavy fall of rain, an earthern pot was discovered in a piece of waste land belonging to the village of Vellaloor about 4 miles to the east of the town of Coimbatore, which on examination was found to be filled with silver coins. When brought to the Collector they were found to be Roman Denarii, 522 in number, chiefly of reigns of Augustus and Tiberius, with a few of Caligula and Claudius. The earthern vessel in which they had lain was like the common terra cotta *lota* of the present time. It was broken to pieces in the scramble of the finders to possess themselves of its contents. Vellaloor is not known to be remarkable as a place of importance either in ancient or modern times.

Only eleven different types were found to occur in the large number of coins above mentioned.

1. Obv. Head of Augustus ....134 examples.

CAES. AVGVSTVS. DIVI. F. PATER. PATRIAE.

Rev. The Pontifical instruments and two bucklers between the standing figures of Caius and Lucius.

C. L. CAESARES. AVGVSTI. F. COS. DESIG. PRINC. IVVENT.

2. Head of Augustus.......... ....1 example

AVGVSTVS. DIVI. F.

Diana Venetrix.

IMP.X.

3. Head of Tiberius....... ....378 examples.

TI. CAESAR. DIVI. AVG. F. AVGVSTVS.

The Emperor seated in a chair.

PONTIF. MAXIM.

4. Head of Drusus Senior.... .. ..1 example.

NERO. CLAVDIVS. DRVSVS. GERMANICVS. IMP.

A triumphal arch ; on the frieze,

DEGERMANIS.*

5. Head of Germanicus (son of the above)..............1 example.

GERMANICVS CAES. P. C. CAES. AVG. GERM.

Head of Caligula.

C. CAES. AVG. GERM. P. M. TR. POT. III. COS. II.

6. Head of Agrippina............ .. .. .1 example.

AGRIPPINA. MAT. CAES. AVG. GERM.

Head of Caligula.

C. CAESAR. AVG. GERM. P. M. TR. POT.†

7. Head of Caligula.

C. CAES. AVG. GERM. P. M. TR. POT ....1 example.

Radiated Head between two stars.‡

8. Head of Claudius.................................1 example.

TI. CLAVD. CAES. AVG. GERM. P. M. TR. P.

Female seated.

CONSTANTIAE. AVGVSTI.||

9. Head of Claudius............................ ....1 example.

DIVVS. CLAVDIVS. AVGVSTVS. a Carpentum drawn by 4 horses. In the exergue.

EX. S. C.§

10. Head of Claudius ....2 examples

TI. CLAVD. CAESAR. AVG. P. M. TR. VI. IMP. XI.

Victory pointing with a cadeuceus to a serpent.

PACI. AVGVSTAE.

* No. 1 of Akerman's Desc. Cat. I. p. 148.

† No. 1 of Akerman's Desc. Cat. I. p. 151.

‡ No. 11 of Akerman's Desc. Cat. I. p. 152.

|| No. 2 of Akerman's Desc. Cat. I. p. 155.

§ No. 7 of Akerman's Desc. Cat. I. p. 156.

11. Head of Claudius.................................1 example.
CLAVD. CAESAR. AVG. P. M. TR. POT. IMP. X.
An oak wreath within which,
S. P. Q. R. P. P. OB. C. S.
———
522

Roman coins have been frequently met with in Southern India particularly in Coimbatore. The Collector in forwarding the above described specimens to Government, notices a similar discovery as having been made at Palachy in the same district in 1800. " A pot was dug up containing a great many Roman coins of Augustus and Tiberius. They were of two kinds but all of the same weight and value."* These were probably the same referred to in a sketch found among the late Col. Mackenzie's papers of " gold and silver imperial coins found in Coimbatore," the latter in Kongyam in 1801. Of these there are 10 drawings all of silver denarii, of the same types as Nos. 1 and 3 above described and the recurrence of which in such large numbers, on two different occasions, is sufficiently remarkable. Col. Mackenzie's other sketches refer to " gold coins found at Caroor in 1806." They are five in number all of different types. 1. AVGVSTVS DIVI. F. with a very curious and apparently undescribed reverse like a dog or sow or some large quadruped, with its nose to the ground and its tail over its back, below which in the exergue IMP. X. 2. The common type of Tiberius as Pontifex Maximus. 3. Of Antonia CONSTANTIÆ. AVGVSTA. (Akerman D. C. I. p. 148. No. 1.) 4. Two of Claudius, one CONSTANTIÆ AVGVSTI (Akerman I p. 155. No. 2.) and the other S. P. Q. R. P. P. OB. C. S. in an oak wreath. Mr. Garrow a former Collector of Coimbatore, in a letter dated 1817, also alludes to a silver coin of Augustus found in one of the old tombs called Pandu Culis with a number of the irregularly shaped punch coins, met with in all parts of India. A letter from Mr. Alexander Davidson, formerly Governor of Madras published in the 2d vol. of the Asiatic Researches† dated July 1787 mentions the discovery of a number of Roman gold coins at Nellore, by a ryot ploughing. About 30 fell into the hands of the Nawab Amir ul Umra among which were several Trajans in fine preservation. His Highness presented two to Mr. Davidson, a Hadrian and Faustina.

In June 1838, an aureus of Trajan in fine preservation was picked up by a woman gathering sticks on the side of a stony hill near the village of Athiral in the Chitwail Talook of the Cuddapah District.

Obv. Head of Trajan.

* Hamilton's Gazetteer p. 636. 8vo. ed. voce Palachy.
Buchanan's Journey II. 318. His description is somewhat inaccurate.
†Asiatic Researches, vol. II. p. 331. 8vo. ed.

IMP. TRAIANO. AVG. GER. DAC. P. M. TR. P.
Rev. A soldier with a spear over his shoulder marching to the right.
COS. V. P. P. S. P. Q. R. OPTIMO. PRINC.

A solidus of Zeno was found in company with three or four of the pagodas called Animitti from their bearing the impression of an elephant and with several silver coins of the type figured by Prinsep as No. 9 of his Ceylon Series* at the foot of an insulated hill in the Tirumangalum Talook of the province of Madura in May 1839. The Animitti were struck by the Princes of the Shera Dynasty. The type of the Roman coin, which has been pierced to be worn as an ornament, bears the armed bust of the Emperor, with

DN. ZENO. PERP. AVG. and the type of victory holding a long cross
VICTORIA. AVGGG. Θ. In the exergue CONOB.†

Still more recently in June 1840 a hoard of Roman aurei was discovered at the Village of Darphal about 15 miles from Sholapoor. They were contained in a small earthen lota and only eighteen were secured, chiefly of the reign of Severus, but a few also of Antoninus, Commodus, Lucius Verus, and Geta. Drawings of a few have been seen and some of these prove to be rare types, such as Severus,

ADVENTVI. AVG. FELICISSIMO.	AkermanDesc.Cat.		No. 3	vol.1. p.341
FELICITAS SAECVLI	do.	do.	do. No. 36	343
FORTVNÆ. REDVCI.			44	344
PROVIDENTIA. Medusa's head.			126	349

One of the Emperors on horseback spearing a Lion appears to refer to a type of Commodus (Akerman No. 99) but the legend is illegible in the drawing. There is also a specimen of Lucius Verus with the type of Œsculapius—and SALVTI. AVG. V. S. P. Q. R. TR. POT. III. COS. II.

It may be added that Roman coins are frequently picked up along the sea shore, to the South of Madras, on mounds of sand distant about 5 or miles apart, on the surface of which they are discovered after high winds or heavy rains. They are mostly oboli worn so smooth as to leave little more than the head and device discernible. The legends of Valentinian, Theodosius and Eudocia, have however been read. Old Hindu and Chinese coins are met on the same spots.

W. E.

Occurrence of Graphite in Tinnavelly and Travancore.—This fact was communicated to us in a letter from a valued correspondent transmitting a number of specimens of limestone from a great bed

* Journal Asiatic Society, vol. vi. pl. 20. p. 298.
† No. 1 of Ackerman's Des. Cat. II. p. 381.

of that rock near Papanassum apparently primary with gneiss on the flanks. This bed runs N. W. and S. E. The graphite occurs both in the limestone and the gneiss and was met with most abundantly in some specimens of yellowish calcareous spar obtained from a quarry or pit in kunkur close to the village of Vickersingam which is at least a mile or a mile and a half S. of the great limestone bed and with a chain of gneiss hills between. The kunker is soft, friable and dug for lime and the calc-spar concretions form boulders in the general mass. "The brilliant metallic scales" our correspondent continues " in the yellowish calc spar must be graphite notwithstanding their brilliancy. Rubbed on paper and looked at *direct* the marks appear black and carbonaceous, but examined obliquely they have the appearance almost of globules of quicksilver,—native amalgam. You will observe these graphite scales also in the specimens from the regular limestone bed ; also in some decomposing specimens of Gneiss and felspar from the Ayen Covil Ghat.* In Travancore the specimens of graphite are from the base of the mountains at Caviattan coodul about E. N. E. of Trivanderam, but you will observe in the 6th Volume of the Madras Quarterly Journal p. 57. in the account of the Trivanderam observatory by Mr. Caldecott that graphite (misprinted granite) is stated to be largely disseminated in the laterite ,which I did not know at the time I found my specimen. The scales at Trivanderam however are very small. I understand also that graphite scales of large size were found at Coolatoray 20 miles S. of Trivanderam when searching there in General Fraser's or Mr. Casamajor's time for coal, so that the graphite tract seems to extend from about 8°—15′ to about 8°—45′ on both sides of the mountains, but perhaps still farther though less easily observable in the highly crystalline varieties of gneiss. If these indications follow the direction of the strata N. W. and S. E. may they not point to the similar deposit in Ceylon?"

The specimens above adverted to, were examined by Dr. Macleod who recognised the graphite immediately. He compared the scales with the finest London B. B. drawing pencil which they resembled exactly. He also tried them with the blow pipe and with acids and deflagrated them with nitrate of ammonia; though, as he observed these tests are hardly necessary to identify graphite, simply rubbing it on paper with the finger being sufficient. The greasy, unctuous touch and fine metallic polish of the finger are sufficiently characteristic.

Language of the Gonds or Goands.—" The people about" here" [Karanjia 16 miles W. of Amarkantak] " are Gonds they know but

* Between Culdacoorchy in Tinnevelly and Colatoorpolay in Trivancore, in which also a deposit of a kind of tufa or kunkur rock was met with, forming a wall or cliff with caverns containing large stalactical concretions.

"little of the Gond language; Hindui and Hindustani are spoken through- "out all the districts W. of Jubbalpûr. I have begun making a collection "of Gond words and I am astonished to find that many are either Cana- "rese or Tamil." Extracts of a letter from the Revd. Mr. Loesch to the Revd. Mr. Mitchell, Bombay, dated Karanjia 1 April 1842. *Or. Chr. Spec. Vol.* 3. *(2nd. Series) p.* 240.

If this fact proves to be correct, it opens an interesting field for ethnological investigation. The Revd. M. Loesch was the head of a German Mission proposed to be founded in Goandwana. He arrived in Bombay in September 1841, with 5 unordained brethren who were artisans and agriculturists. After some difficulty in selecting a station they rented some waste lands at Karangia. But the climate proved uncongenial. Four out of the six Missionaries died of fever and in the begining of 1843 the two remaining brethren abandoned their station and came to Kamptee intending however to resume the Mission.

To the same effect Mr. D. F. M'Leod of the Bengal Civil Service, writes to the Secretary of the Asiatic Society: "I have long purposed intimating to you a remarkable philological fact. It was clearly ascertained by a German missionary, named Loesch, that the language spoken by our Gonds is fundamentally the same with the Canarese. Mr. Loesch had become familiar with the latter formerly at Mangalore, and other places under the Bombay Presidency, and found himself able almost to converse with the Gonds, or at all events to make himself in a great measure understood by them by using this language; and being a gentleman of great acquirements and philological acuteness, had he lived, I have no doubt he would have been able to throw much light on the interesting question of the origin of the people. It has been decreed otherwise; but were the facts generally known, Canarese scholars might be induced to turn their attention to the subject." *Friend of India* 28*th March* 1844. *p.* 203.

Early use of Cast Iron in China.—A letter has recently been received from the celebrated Prussian missionary Gatzlaff, who is at present in China. It contains the following curious observations: "I have obtained uncontradictable evidence that the art of constructing buildings of cast iron was practised several centuries ago in the celestial empire. I found on the summit of a hill near the town of Tsing-Kiang-Foo, in the province of Kiang-Nan, a pagoda entirely formed of cast iron, and covered with bas-reliefs and inscriptions. The dates and the form of the character belong to the period of the dynasty of the Tsangs, who occupied the throne as

early as the fifth or sixth century of the christian era. This monument, therefore may be presumed to be twelve hundred years old. The structure is singularly elegant, in its form, and surpasses every thing of the kind I have hitherto seen." *Br. and For. Review*

Discovery of Sulphate of Barytes or heavy spar on the East Ghauts by Captain Newbold.—Captain Newbold in a recent communication informs us that he has lately discovered the existence of Sulphate of Barytes in the Nulla Mulla hills (Eastern Ghauts) in the vicinity of Gazoopelly in the Kurnool territory, in about Latitude 158° 25′ N.

"The site" he adds, "lies about 6 miles easterly from the village, in the jungle, and is marked by numerous excavations formerly made by the natives in search of lead. The barytes occurs in the argillaceous and arenaceous shales into which the Kurnool and Cuddapah limestone often passes. These rocks are intersected by *rake*, or fissuriferous veins, composed principally of quartz, and argillaceous and calcareous matter, abounding with galena in nests and strings, and sulphate of barytes in masses; nodules and broken veins, having externally a yellowish brown ferruginous aspect. The sulphate is both of the crystalline and massive varieties with a lamellar structure often curved in the latter and divisible into right rhombic prisms. The colour white and greyish-transparent, easily frangible. Before the blow pipe it decrepitates, phosphorises and fuses with difficulty into a white enamel. In the interior flame it assumes a burning sulphurous or hepatic taste and on being bruised with the hammer or rubbed with any hard substance, gives out a sulphurous odour. Hardness: 3. of Mohs; spec. grav. I found to be 4-2, a little less than that of European sulphates which vary from 4-4 to 4-7 the difference probably arising from foreign admixture."

"The following is an abstract of an analysis of this mineral with which I have been favored by my friend J. Macleod Esq.; Inspector General of Hospitals. 'A portion of the mineral was digested in muriatic and nitric acid, but they had no action on it. Another portion was boiled in a solution of carbonate of Potass. The solution thus formed was tested for sulphuric acid by muriate of Barytes, which proved the presence of sulphuric acid. The insoluble portion now dissolved in dilute muriatic acid, forming a solution which yielded a white precipitat to dilute sulph. Acid. A portion of this precipitate was evaporated to dryness and dissolved in alcohol. The solution was ignited but the flame exhibited no appearance of that beautiful carmine colour so peculiar and so characterestic of the soluble salts of strontian. It was therefore not strontian but barytes."'

"Three other minerals were found not yet analysed and reddish brown oxide of iron in the veins with the barytes and or at least with rocks of an age anterior to the lias, as galena does not usually occur in formations less ancient than the new red-sand stone but extends downwards to beds considered as primary. Mineral character is, however only one out the four tests by which geologists determine the age of rocks and of which superposition is the principal. The remaining tests are organic remains, and included fragments of another rock the age of which is known. Mr. Malcolmson found a fossil plant in the sandstone of Won in the Hydrabad territory of a deep black colour; and Lieut. Munro discovered fossil plants in the sandstone of Nagpore resembling the *glossopteris danæoides* of the Burdwan coal field, figured by Dr. Royle in his 2d plate which was shown to me by Mr. Malcolmson at Bombay and of which he has given an interesting account in No. 5 of the Bombay Journal B. B. A. S. With these plants impressions were found which he thinks not unlike those of the large bony scales of the sauroid fishes of the carboniferous and old red sandstone rocks, especially of the latter. Mr. Malcolmson very properly adds, they are however too imperfect to justify any opinion as to their nature although in a subject so new no indication should be overlooked. The Kurnool, Cuddapah and Nagpore limestone and sandstone formation is distinguished by a very striking mineralogical feature—that of the latter of these associated rocks being the geognostic situs of the diamond. Owing to their connection with and relative position to other rocks it is a point of great importance to fix their age, wherein will be found a key to the geological chronology of southern India. In connection with this interesting subject I may add that Dr. Walker of the Nizam's service has recently sent me specimens of true coal discovered by himself in the limestone of the Hydrabad country. The identity (which is very probable) of this limestone and the diamond limestone of Cuddaph, and Kurnool still however, remains to be proved.

The Syrian Church in China.—A French journal states, that "there has lately been placed in the principal gallery of the Collection of M. S. S. at Paris, an inscription in the Chinese and Syriac languages of the date A. D. 781 showing the arrival of Syriac missionaries and propagation of Christianity in China in the 7th and 8th Centuries. The inscription was found in 1825 in a city of China."

Literary Gazette
No. 1416.

XII.—*Review.—Illustrations of Indian Ornithology.* *No.* 1 *to be completed in* 4 *Nos.* *By* T. C. Jerdon, Esq. J. B. Pharaoh, Madras 1843.

Until of late years the period of British supremacy in India has been little marked by attention to scientific research. The French with smaller means and a more confined range were earlier in the field; and the frequent recurrence of the trivial name *Ponticerianus* marks how well they seized the opportunities afforded them of describing some of the more familiar natural forms. It was however less from defect of observation than from absence of means of publication that English naturalists appear so far behind. The recorded observations and drawings of Doctor Hamilton Buchanan embraced every branch of Natural History and are equally remarkable for their accuracy as their extent. But from want of patronage they have never seen the light. His stores are even believed to have served as the unacknowledged materials for less laborious observers. But latterly a more honorable feeling has prevailed, and his merits have been acknowledged and proclaimed by McClelland, Blyth and other recent naturalists.

The work now before us is an honorable contribution both to the science and the art of southern India. Mr. Jerdon early distinguished himself as a profound and accurate observer and his Catalogue of the Birds of the Peninsula in the preceding Nos. of this Journal is one of the most complete and useful descriptive lists that has ever appeared. The 1st No of the present work seems intended to follow out the same design by adding Illustrations of the new and more remarkable forms embraced in the Catalogue. They are published in two sizes 4to. and 8vo.—the larger size being more accordant with the usual form and pretension of such publications,—the smaller more handy and easy of reference and with the additional advantage of being fitted to bind up with the original Catalogue. But in both the figures are exactly the same. In execution and coloring they challenge a comparison with the best illustrated works that have issued from the European press. Yet with the exception of the back and fore-grounds, the perches &c. for which Mr. Jerdon has been indebted to an amateur friend, the whole appears to be the performance of Na-

tive artists, evidently however controlled and directed by the author's knowledge of the habits, forms and attitudes of the different Birds. The 12 figures in No. 1* are not confined to any particular class but comprise Accipitrine and Passerine, climbing and wading individuals, interesting alike to the naturalist, the sportsman or the simple admirer of nature. The new facts developed regarding the Paradise-Fly catcher and the notice of the habits of the large Hawk Eagle [which Mr. Blyth considers to be identical with the *Aquila Bonelli* of Europe†] are valuable contributions to science, while the lovers of the chase with whom India abounds, cannot but be gratified with the successful delineation of their old friends, the painted rock-grouse and the solitary snipe, the latter in its natural haunt by the edge of a swamp at the foot of a shola or coppice on the Neilgherries. The peculiar character of the scenery of these mountains is exquisitely preserved both in this plate and in that of Ward's Thrush. One of the best figures appears to us to be the Royal Falcon No. 12 in which the bold and dignified repose of the noble bird of prey is happily caught. We have no doubt that the author is correct in considering this species to be the Falcon originally described by Aldovrand, as seen by him at the Court of the Grand Duke of Tuscany to whom a pair had been sent from the East. The Shaheen has long been famed in oriental field sports and is described in Persian and Arabic treatises on Falconry of a much earlier date than that referred to.‡ It is notorious that the art of training the Falcon was introduced into Europe from the East and it can hardly be doubted that the returning Crusaders carried with them both the Shaheen and the Byhree the two most docile and easily reclaimed of the long-winged Hawks, and consequently the most priz-

* 1 *Nisætus grandis* [*strenuus in the plate.*]
2 *Leucocirca albofrontata.*
3 *Zanclostomus viridirostris.*
4 *Accipiter besra.*
5 *Picus Hodgsonii.*
6 *Prinia cursitans.*
7 *Muscipeta paradisea.*
8 *Turdus Wardii.*
9 *Scolopax Nemoricola.*
10 *Pterocles quadricinctus.*
11 *Phœnicornis flammeus.*
12 *Falco Shaheen.*

† Calcutta Jour. Nat. His. No. xvi. Vol. IV. p. 535.

‡ Ulysses Aldovrand a Noble of Bologna and Professor in the University of his native city was born 1525; died 1605. The Hawks were probably sent to Ferdinand de Medici.

ed by sportsmen. The Byhree would soon be recognized as identical with the Peregrine of their own country, but the Shaheen must always have been a rare and costly exotic. It is farther remarkable that the Baz the prince of Asiatic short winged Hawks, has attained an equal celebrity in the west under the name of the Falcon Gentle. In India a cast of Bazes can rarely be purchased under 1000 Rupees. But by genuine sportsmen they are less prized than the Byhree, the long flights of which at the Crane or Heron constitute the perfection of falconry.

But to return to the Illustrations. It only remains to notice the few defects in execution which are sufficiently explained in the introductory notice. But it is matter of serious regret that the letter-press should not be in keeping with the rest of the work, particularly as regards the inferior quality of the paper.

We trust to see this defect remedied in the future numbers of a work which ought to occupy a permanent place in every scientific Library, and on the shelves of every Indian reader both in this country and at home.

XIII.—*Abstract of proceedings of the Madras Literary Society.*

At the Annual General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held at the Society Rooms at the College on Saturday the 16*th January* 1841.

The Secretary submitted to the Meeting, statements of the Society's account for the past year.

The following donations having been made to the Society since the last annual general Meeting, the thanks of the Society were unanimously voted to the donors.

Result of Astronomical observations at Madras for 1838-39 .... Madras Government.

Narrative of the Discoveries of Sir Charles Bell in the Nervous system .... James Shaw Esq. on the part of the author A. Shaw Esq.

Piddington on the Law of Storms as applying to the Tempests of the Indian and China Seas	Madras Government
Choix de Contes et Nouvelles, traduit du Chinois par Theodore Pavie	The Translator.
Braddock's Guide to Chemical Test and Analysis	The Author.
Transactions of the agricultural and Horticultural Society of India 7 vols	Agri-Horticultural Society.
Topography of Calcutta. By F. P. Strong Esq	The Author.
The Vishnu Purana. Translated into English by Professor Wilson, 4 Copies	Madras Government.
Captain Low's Dissertation on Penang and Province Wellesley	Lieut. T. J. Newbold.
A Help in acquiring a knowledge of the Canarese language (English and Canarese.)	Do.
Journal of a Tour along the Coast of Java and Bali &c.	Do.
Aperçu General Sur le Territoire D'Arménie	Do.
The Risalah of Shekh Alkhatul	Do.
Tarekhi Ferishta	Do.
The History of Seringapatam and Madras (Persian.)	Do.
The translation of the Gospels into Malay	Do.
The poems of Amir Khusroo (Persian.)	Do.
Journal of the Asiatic Society of Bengal for 1840	Asiatic Society of Bengal.
Transactions of the Royal Medico Botanical Society of London, Vol. 1. Part 4	Medico Botanical Society.
Journal of the Royal Geographical Society of London, Vol. 9. Part 3	Royal Geographical Society of London.
Transactions of the Geological Society of London. Second Series—Parts 1, 2, 3, of Vol. 5	Geological Society.
The Calcutta Journal of Natural History	The Editor.
Corbyn's India Review for 1840	The Editor.
Treatise on Arms and Warlike Implements, in Arabic..	The Earl of Munster.
Journal of the Royal Asiatic Society of Great Britain and Ireland, No. 11	Royal Asiatic Society.
The India Journal of Medical and Physical Science for 1840	The Editor.
The Chinese Secret Triad Society of the Tien-ti Huih...	Royal Asiatic Society.
The Chinese Repository for 1840	The Editor.

Scientific Memoirs selected from the Transactions of Foreign Academies of Science and learned Societies and from Foreign Journals. Vol. 2. Part 7........	The Editor.
Wilson's Two Lectures on the Religious Practices and opinions of the Hindoos........................	C. P. Brown Esq.
Essay on the Creed, Custom and Literature of the Jangums, 2 Copies......	Do.
Proceedings of the Geographical Society of Bombay..	Bombay Geographical Society.
Specimens of Rocks from Southern India..........	Lieut. T. J. Newbold
Singular spherical mineral masses from Streepermatoor.	J. Sanderson Esq.
Specimens of the silicified wood from Trivecary.....	C. T. Kaye Esq.
Shell Limestone from Pondicherry.................	Lieut. T. J. Newbold
Specimen of Coal from Mergui......	Col. W. Cullen.
A bottle of water filled from the hot spring near Rheim.	Do.
A bottle of water filled from the hot spring near fort Lismore...........	Do.
Specimens of Indian Marble (polished)............	Do.

It having been suggested by Dr. Cole that one more Report on the Mackenzie M. S. S. was due. It was resolved—That it be referred to the Committee of Papers to enquire from the Rev. Mr. Taylor whether his reports on the Mackenzie M. S. S. are concluded and that the Secretary of the Committee of Papers be requested to communicate this Resolution of the Society to the Rev. Mr. Taylor; it being necessary for the Society to write to the Government on the subject.

At a General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society convened by special Notice on Wednesday the 18*th August* 1841.

The President stated that the object of this Meeting was to determine as to the propriety of discontinuing the publication of the Madras Journal of Literature and Science; he had attentively examined the whole of the papers and accounts which had been in circulation amongst the Members of the Managing Committee and he would now bring the result of that examination before the present Meeting to enable them to form a correct judgment on this subject. He stated that it having been considered advisable to order from England the paper necessary for the printing

of the Journal it appeared that shipments of paper were made to Mr Cole by Allen and Co. the booksellers in England on the 1st April 1837

to the extent of	82	10	0
on the 30th October 1837	80	7	0
on 4th April 1838	82	3	6
and a consignment of books to Mr. Cole as the Editor on 2d August 1837	10	0	6
	£ 255	1	0

That by some unaccountable mistake the letters written by Allen and Co. to Mr. Cole, on 13th April 1839 1st June 1839 and 18th January 1840 have never been received, but that copies of these letters are now forwarded by Allen and Co. to the Secretary and are on the table, by their letter of the 13th April 1839, a balance was shewn in Allen and Co.'s favour of £ 292. 2 0 and on the 1st June 1839, a bill for £ 100 0 0 was acknowledged and on the 18th January 1840 the account was made up to the end of 1839, shewing a balance against the Society of £ 220 7 8. By Allen and Co.'s letter to Mr. Cole of May 31st 1841 the balance due to Allen and Co. at the end of December 1840 amounted to £ 240 6 7.

On examination, however, of the account it appears that the Society had been debited with a work (Cuvier) purchased by Mr. Cole on his separate account of the value of £ 27 10 3 which being deducted, left the balance of £ 212 16 4 due from the Society. By letters from Allen and Co to the Secretary dated January 30th 1841 there was a sum in their

hands of	77	10	5
and a bill for	100	0	0
	177	10	5
and that after the payment of a sum of £ 11 10 10 as mentioned in their letter the balance in their hands in favor of the Society amounted to £	155	19	7
That Allen and Co. by their account admit that the sum of	100	0	0
had been remitted on 28th July 1841	255	19	7
so that on deducting the sum due for the debt of the Journal	212	16	4
there would be a sum of	43	3	3

on the general balance due to the Society.

Adverting to the sale of the Journal that there is a sum of Rupees 1823 0 0 due from persons who have not paid for their copies; that numbers, to the value of Rupees 5,856 8 0 remain unsold; and that

the loss already incurred by the Society on account of the Journal since August 1836 is Rupees 3032 10 10. Under these circumstances it would be for the Society to say, whether the Journal ought to be continued?

The Rev. F. Spring then moved on the above statement of the President that the publication of the Journal be discontinued. N.B. Acworth Esq. seconded the motion. Walter Elliot Esq moved as an amendment, that the Regular Quarterly publication of the Journal be discontinued, and that instead thereof, an occasional number should from time to time be published, as matter of sufficient interest is found to accumulate with the Committee of Papers, and that the publication shall be confined entirely to original papers, and that the publication of each number shall be sanctioned by the Committee of Management. Major Underwood seconds the amendment which was put and carried.

The President then moved that the thanks of the Society be given to R. Cole, Esq. for the great zeal and talent which he has displayed in conducting the Journal of the Society. Walter Elliot Esq. seconded the motion which was carried unanimously.

The thanks of the Meeting were then voted to the President and the meeting adjourned.

At the Annual General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held at the College on Tuesday the 8th February 1842.

The Secretary lays before the Meeting the usual Financial Statements.

The Secretary then read a letter from the Honorable Sir R. Comyn dated 15th January 1842, resigning the office of President of this Society on which it was proposed by the Chairman and carried unanimously, that the thanks of the Society be presented to Sir R. Comyn for his valuable exertions during the period he filled the office of President of the Society.

The Chairman then proposed that Sir Edward Gambier should be requested to undertake the office of President of this Society which was carried unanimously and the Secretary was requested to communicate to Sir E. Gambier the wishes of the Society hereon.

The Secretary then read a list of the Donations of Books which had been made to the Society during the last year.

Mr. Walter Elliot then brought forward a resolution which was seconded

by Mr. Acworth. "That the 7th, the 8th, the 9th and the 10th existing Rules of this Society be rescinded, and instead of the business of the Society being conducted by two Committees as hitherto that the Committee of Management and the Committee of Papers shall form one General Committee, with power to appoint Sub Committees, as may be required, from the Members of the General Committee and that the duties conducted by the Committee of Papers of the Asiatic Department be in future entrusted to a Sub Committee so selected which being carried unanimously the follwing resolutions were then proposed.

1st. That the management of the affairs of this Society be vested in eleven Members who together with the Secretary shall form the General Committee of Management of this Society and that such ten Members be severally chosen at the annual General Meeting of the Society.

2d. That the General Committee of Management shall elect their own Chairman, who shall, ex-officio, be a Member of all Sub Committees.

3d. That the whole of the funds of this Society shall be subject to the control of the General Committee of Management and that all donations and subscriptions shall form one fund to be appropriated for the general purposes of the Society—which Resolutions being also carried unanimously,

The Committee of Management then present proceeded to elect their Chairman and J. C. Morris Esq. was immediately chosen as the Chairman and took his seat accordingly.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society on Wednesday the 8th June 1842.

Walter Elliot Esq. stated that he had observed in the list of unclaimed letters published by the Post Master General one addressed "Alla Societá d' Istoria Naturale a Madras."

Resolved.—That the Secretary be requested to claim it on behalf of the Society, and that it be laid before the next Meeting of the Committee.

Resolved.—That the Members of the Committee do make a careful examination of the different classes of the works composing the Library of this Society, and make reports thereon, shewing what standard authors are required for purposes of reference in each class. That at the same time the opportunity be taken of correcting and arranging the Catalogue

so that a new edition may be prepared and printed without delay.

Resolved.—That when these Reports have been laid before the Committee and confirmed that steps be taken to prepare and print a new Catalogue, and to arrange the books according to the subjects in the different cases.

Resolved.—That the classes be assigned to the different Members of the Committee as follows.

Divinity and Belles Letters to the Rev. G. Knox; History to N. B. Acworth Esq. and the Rev. G. Knox; Politics, Statistics and Law to M. Lewin Esq. Biography to J. Minchin Esq.

Natural Philosophy to Lieutenant Worster.
Natural History to Walter Elliot Esq.
Novels to W. Douglas Esq. and N. B. Acworth Esq.
Oriental Literature to Messrs. Morris and Elliot.
Classical ditto to the Rev. G. Knox.

Antiquities comprising ancient Architecture, Numismatics, &c. } to Col. Felix and W. Elliot.
Foreign Literature.———.

Resolved.—That Messrs. Elliot and Worster be appointed as a sub-Committee, and be requested to examine and report on the present state of the Museum, with permission to avail themselves of the assistance of persons qualified to lend their aid in each particular department.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society on Thursday the 7th July 1842.

From the examination of the Library now in progress it appears that the four first volumes of Buffon's Natural History a work consisting of 137 Vols. are wanting and the Librarian states that they have been taken to England by Mr. Sullivan.

Resolved.—That the Secretary be requested to write to Mr. Sullivan to beg that he will be good enough to return them.

The Committee then proceeded to examine the Report of the Sub-Committee as to the books that were to be sold and confirmed the same with the exceptions mentioned in the list.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held on Monday the 15th August 1842.

The Secretary lays before the Meeting the following letter from C. P. Brown Esq.

25*th July*, 1842,

My Dear Mr. Minchin,

The accompanying are the documents (*Copies* of inscriptions and books) which were laid before the Literary Society by Captain Newbold before he went home. On examination they proved to be chiefly Jaina books in the ancient Canarese language : I made an attempt to translate them but desisted for want of aid : no native known to me possessing a sufficient knowledge of the ancient Cannadi to explain these papers in a satisfactory manner. Those who have attempted the work complain that these transcripts are so erroneous that no translation can be made in a satisfactory manner. This however is perhaps only an excuse to cover their own ignorance—or their reluctance to read papers upholding sects (Jaina and Jangam) that oppose the Bramins. At Bellary or Bangalore I have no doubt a translation could easily be found : but the task would be tedious the papers being so extensive.

Yours very Sincerely
(*signed*) C. P. Brown.

Walter Elliot Esq. undertook to look over the papers referred to in it, and to bring the subject forward for the further consideration of the Meeting, about six Weeks or two months hence.

The Secretary lays before the Meeting the following letter from M. De Tassy.

53 Rue St. Andre des arts,
Paris, 19*th Xbre.* 1841.

Monsieur,

Je profite de l'occasion d'un de mes éléves qui retourne dans l'Inde, pour me rappeler au souvenir de la Société littéraire de Madras ā laquelle j'á l'honneur d'áppartenir depuis long-temps en qualité de Membre honoraire.

Je n'ái pas cru nécessaire de réclamer contre le bruit de ma mort qui s'est repandu dans l'Inde l'án passé et que le journal de la Société, a publiè cette nouvelle dont je ne comprends pas l'origine ; puisqu'on me citait á coté de mon honorable maitre et ami M. le Baron Silvestre de Sacy avec qui on aurait pu me confondre á cause de mon surnom. Elle a été aussi répeteé par le Journal de la Société Asiatique de Calcutta avec laquelle je suis neanmoins en correspondence d'une maniére plus suivie. Quoiqu'il en soít je crains qu'élle n'ait contribué á faire cesser de la part de la Société de Madras, l'envoi de son interessant Journal dont j' ávai sreçu les premiers volumes. Si la Société voulait m'áccorder la faveur de me l'envoyer encore, a partir de janvier 1842

j'acheterais á Londres les volumes qui en manquent pour avoir la collection complette. La Société ne doit pas douter que je serais tres reconnaissant de cette marque d'intéret et que je me ferais un devoir de lui étre utile, dans l'occasion, soit auprés de l'Institution royale de France, soit auprés de la Société Asiatique de Paris, soit á toute autre maniére.

Je desirerais bien savoir si on a fait dernierement á Madras quelque publica tion en hindoustani. Je n'ai pas encore pu me procurer le tome II de la traduction hindoustani des mille et une nuits. Il serait bien á desirer qu'on en continuât l'impression.

Je m'occupe activement du second volume de mon Histoire de la literature hindoustani-Je tàche d'obtenir le plus de renseignements possibles-Pour cela je me recommande á la bienveillance de toutes amis de la litterature orientale.

J'ai l'honneur d'étre avec une consideration parfaite.

Monsieur,

Votre três humble Serviteur

(Signed) GARCIN DE TASSY.

Membre honoraire de la Societie litteraire de Madras,

53 *Rue St, Andre des arts.*

The Secretary is requested to complete M. de Tassy's copy of the Madras Journal of literature and science.

The Secretary produces the rejected books which at the last Meeting were ordered to stand over for further consideration and also a statement from the Librarian shewing how often they had been required from the Library by the Subscribers.

Resolved.—That a general Meeting be called on Saturday the 27th instant to sanction their sale and the sale of the books already rejected by the general Meeting.

At a Special General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held at the Society's Rooms, at the College on Saturday the 27*th August* 1842.

The Secretary then read to the Meeting a list of various books rejected by the Sub-Committee and with the exception of several works which the Meeting considered necessary to be returned to the Library, the rest were unanimously determined to be sold.

Resolved.—That the General Committee be authorized to carry into effect the Resolution of the Meeting to sell the books now rejected at the best price they can obtain for them.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society on Monday the 19*th September* 1842.

Several Members having brought their reformed portions of the Catalogue, Resolved that in compliance with his offer the Rev. G. Knox be requested to superintend the preparation of the new Catalogue and that a Writer be specially placed under his orders.

That all books recommended as desiderata to be added to the Library be included under their several heads in a separate book as a sort of new Catalogue.

With a view to a renewal of the Journal as determined at the General Meeting held on the 18th August 1841, it is proposed that the following Gentlemen be elected as a Committee of Papers, or rather that the whole Committee be considered as a Committee of Papers and that Messrs. Worster and Elliot be joint Secretaries to the Committee of Papers, that the Secretaries examine all Papers and circulate such as they think proper and adapted for publication on examining the papers already collected and take measures to collect new ones.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held on Saturday the 19*th November* 1842.

The Secretary reads the following letter received by him from Mr. Piddington.

Sir,

I am authorised by the Committee of Papers of the Asiatic Society, to forward to you the accompanying Memorandum relative to the Museum of Economic Geology of India *now forming, in the confident hope that you will personally, and through your friends, kindly assist their views and those of Government, as far as lies in your power.*

With respect to carriage of Specimens, such small ones as may not exceed the usual dawk banghy weight, say 500 *Tolas, may be sent at once, addressed to the Secretary of the Asiatic Society, and those above that weight dispatched by the nearest water carriage, preferring the Steamers if obtainable.*

I am, Sir,
Your obedient Servant,
H. PIDDINGTON.
Curator, Mus. Econ. Geology of India.

Calcutta, 1*st November,* 1842.

MUSEUM OF ECONOMIC GEOLOGY OF INDIA.

The objects of the Museum of Economic Geology of India, which has been established by Government at Calcutta, under orders from the Hon'ble the Court of Directors, in conjunction with the Asiatic Society and at its Rooms are the following: They are, as scientific men will perceive, generally those of Economic Geologists in all countries, but there are some peculiarities connected with India, and the situations of Europeans in it, which will oblige us to go into a little detail, to explain to those who may not already take an interest in these matters, our wants, our wishes, and our hopes of the advantages which may accrue to the community from this new establishment. Its objects them are briefly these:—

1. To obtain the most complete Geological, Mineralogical, and Statistical knowledge possible of all the mineral resources of India, wrought or unwrought, so as to make them as publicly known as possible, to shew how they have been, or are now wrought, or how they might be so to the best advantage.

2. To obtain a complete set of specimens, models, and drawings, relative to the Mining operations, Metallurgical processes, and mineral manufactures of all kinds, of India and of Europe and America; so as to afford to the public information of every thing which can be turned to account here or in Europe, and perhaps prevent loss of time, waste of capital, and disappointment to the Indian speculator.

3. To furnish the Engineer and Architect with a complete collection of all the materials, natural or artificial, which are now, or have formerly been used for buildings, cements, roads, &c. and of all which *may* possibly be useful in this department, whether European or Indian.

4. To collect for the Agriculturalist, specimens of all kinds of soils remarkable for their good or bad qualities, with the subsoil, subjacent rocks, &c and by examination of these, to indicate their various peculiarities and the remedies for their defects.

5. To collect for Medical men, the waters of mineral springs, mineral drugs, &c. &c.

6. And finally, by chemical examinations of all these various specimens, to determine their value, and how they may be best turned to account for the general benefit of the community.

With objects like these the Museum of Economic Geology may be said to be placed between the purely scientific geologist and the merchant, the miner, the farmer, the manufacturer, and the builder, or in other words, the merely practical men, who may desire to know how the knowledge of the geologist and mineralogist,—to them often so recondite, and apparently so useless,—can for-

ward their views: and its office, to be, if possible, to answer all questions of this nature which may arise, for public benefit.

This may sometimes to be done from books, but the great library must be the collections of our Museum, which are in fact a library of examples, to which the commentary is the laboratory; where, aided by the resources of the collection, questions may often be solved in an hour, a day, or a week, which it would take half an Indian life to obtain the mere materials for investigating. An extensive collection, then, is the first requisite, and this should, if possible comprise every inorganic product of the earth from which mankind derive any advantage, with every information relative to it. It will readily occur to the reader, that in India, owing to her infancy in some of the arts dependant on these products, as in mining, agriculture, &c.; and her singular progress in others, as in peculiar branches of Metallurgy and the like, our almost absolute ignorance of what her methods and resources are, the peculiarities of situation in which these resources may exist, those of climate, workmen, and many others; we have almost every thing yet to learn; and that to accomplish our objects, we cannot be too well furnished with all the knowledge and examples of Europe and the Americas, and all those of India, or of Asia. Without these, our progress must be very limited; but in proportion as we obtain them, we may hope, without presumption, to see the day when the mines, the quarries, and the soil of India may be done justice to, which assuredly, has never yet been the case.* In this all classes are so clearly interested, that it would be superfluous to shew it, as it is to shew that the resources of every country are far more readily developed with public means for investigating, preserving, and publishing all knowledge belonging to them, than where none such exist.

It is therefore hoped, that those who may be desirous of assisting this great public work, will bear in mind, that nothing, however familiar it may be to those on the spot, is indifferent to us; for *if not wanted for the institution, it may serve to procure that which is;* and the following note is given rather as a general memorandum than as specifying all which is desired. The general rule is, that details cannot be too numerous, nor specimens too various, particularly if purely Indian.

* It is curious to find that upwards of 140 years ago, the ores of the precious metals were an article of export from the Dutch East Indies! This is clearly shewn by the following passage from Schlutter's work, as translated by Hellot, and published by him under the title of "Hellot sur les Mines," Paris 1753. In Vol. II, p, 215, Chap, XLVI, "*On the East Indian Ores and their Fusion by the curved Furnace*," he says,—

"In 1704, Schlutter received by a private channel twenty-five quintals of ore from the East Indies, &c." And again: "These sorts of ores (of gold and silver) sent from India by the Dutch were frequently smelted at the foundery of Altenau in the Upper Hartz, but had never been smelted in the lower Hartz. This ore was in lumps from the size of a nut to that of walnut, and by trials it was found that the quint of 110lbs. contained 1 oz. 8 drs. of gold and 3 oz. of silver."

DESIDERATA FOR THE MUSEUM OF ECONOMIC GEOLOGY OF INDIA.

I.

Mines and Mining Products.

1. Specimens of all crude ores, just as found. If possible also, of the rocks a matrix in which found; of those indicating the vein at the surface; of the walls of the veins; of the strata or beds passed through before reaching them and of the rocks of the surrounding country.

2. The ores after preparation for the furnace by picking, washing, stamping roasting, &c.

3. The rejected ores, gravel or stones found with those used; which often go under odd names, as those of "mother, devil," or the like.

4. The fluxes used, if any.

5. Memorandum of the kind of fuel used, samples of it if coal or coke, &c. names of the trees, as bamboo, &c. if charcoal; and if not too far, send specimens.

6. The roasted or half smelted ore.

7. The pure metals, as obtained in a merchantable state, of all the qualities.

8. The slags, of all kinds, from the furnaces and smeltings.

9. Drawings of models, (to scale if possible) of all furnaces, machinery, and implements used in any of the processes, with drawings, plans and models of the mine. Earthern models of the furnaces, &c. may often be well made, by the native image makers for a mere trifle.

10. Specimens of any tools used,

11. Traditions, history, and statistics of the mine or mineral products, as (1) How and when found; (2.) Produce, gross and net; (3.) Rent if farmed, or what tax payable on the product; (4) Price of daily labour; (5.) Amount of labour obtainable for a given price; (6.) Estimated profits, past and present; (7.) Reasons for decay or increase; (8.) What is now required to make the mine more productive; (9.) Copies or notices of any books or accounts of the mine; (10.) Health, comfort, morals, and condition of the workmen employed, average of ages, and of life among them if thought unhealthy; seasons and hours of work. Superstitious notions, peculiar diseases, &c. &c.

II.

Buildings, Cements, Pottery, Colours, Roads, &c.

1. Specimens from the quarries, of all kinds of building stones, useful or merely ornamental.

2. The same of limestones, shells, corals, or other articles, used to make lime or cements of all kinds.

3. Specimens of the strata above and below the quarried stone.

4. Any fossil shells, bones, fish, plants, insects, or other appearances of organic remains large or small, found in or near the quarries, or amongst the rubbish and watercourses of quarried spots. If specimens appear too large to move, please to give a notice, with an eye-sketch, and estimate of the expence of moving, and preserve it till a reply is sent.

5. Specimens of the building stones or remarkable bricks used in any public edifices, monuments or tombs, with the date of their erection if known, and a note to say if exposed to weather or protected by stucco, paint, or roofs.

6. Memoranda and specimens of any plants or animals destructive to masonry, as boring worms and shells in water, and the like, with specimens of their work.

7. Ornamental or stucco-work : specimens of it, new or old, interior or exterior, with the best account procurable of the materials, preparations, and working of them.

8. Specimens of stones and marbles, shells, &c. used for image or ornament-making ; of earths for pottery, and varnishes of coloured earths of all sorts, whether used as pigments or not.

9. Specimens of peculiarly good materials used for roads, whether ancient or modern, with prices, method of using them, and other Memoranda.

10. Prices of all the above ; rates of labour, carriage, &c. from the rough to the wrought state, and all other statistical details as in the case of Mines and Mineral products above mentioned.

III.

Agricultural Geology.

1. Specimens of soils of good, and the best qualities, for all kinds of produce, as sugar, cotton, tobacco, &c.

2. Of infertile soils or veins of earth.

3. Of the subsoil or rock.

4. Of the stones scattered about these soils.

5. Memoranda relative to the height of these soils above the water of wells in the rains and dry season, and of its drainage, shelter, exposition, &c.

6. Of any kind of earths, mud, or stones used as manures, as peats from the jheels, kunkurs, &c.

7. Of the deposists (fertile and infertile) left either by the common inundations or by violent floods, with memoranda of their effects on the cultivated soil

8. Specimens from any separate spots, where gravel or stones are collected in quantities after inundations or floods.

9. Accounts of remarkable floods, and average heights of the rise of rivers.

of the raising of the soil, alterations in its produce consequent thereupon, and all other details.

10. Memoranda relative to the formation or destruction of river-banks, islands, &c. with measurement if obtainable.

11. Samples of all kinds of efflorescent salt-earths, with specimens of the different salts prepared from them, prices of preparation, selling rates, and accounts of the processses aud uses of the salts.

12. Specimens of brine springs, with details of manufacture if boiled for salt, and statistics of labour and produce, &c. as in the case of mines.

IV.

MEDICAL GEOLOGY.

1. Specimens of mineral medicines of all sorts, whether produced on the spot or imported, crude and prepared, with notes and samples of the process of preparation in all its stages.

2. Of the water of mineral springs, their temperature, incrustations about them, account of their uses, and specimens of the rocks or soil in which found.

V.

NATIVE METALLURGICAL PROCESSES, OR MINERAL MANUFACTURES.

1. Exact descriptions of them, however rude or simple they may appear, with samples of the ores, fuel, fluxes, products, slags, &c.

2. Models or drawings (to scale if possible) of the furnaces and implements of all kinds; specimens of these last may be sent.

3. Memoranda and samples of the earths or sands used for moulds in castings, of the crucibles and beds, raw and baked, and of the raw material from which made.

4. Prices of raw and wrought materials.

5. Drawings of machinery used for turning, boring, polishing, &c.

In conclusion: It is not supposed that any individual, unless wholly devoted to the research, can supply the whole of the desired specimens, or even of the knowledge relative to any one product; but any *single* item of the foregoing may be of importance, at sometime, to some one; and it will be the special duty of the Asiatic Society, and of the Curator of the Museum, to see justice done to every contribution; whether relating to the Geology of India in general, or to this peculiar branch of it.

H. PIDDINGTON,
Curator Museum Economical Geology.

Resolved.—That a copy of the enclosure be forwarded to the following Gentlemen.

Major General Cullen.
Captain Newbold.

D. Balfourr, at Ahmednuggar.
Captain James Allardyce, at Dhawar.
Dr. Primrose, at Hyderabad.

And that a copy of the letter with its enclosure be sent to the Gazette with a request that the same may be published therein.

The revised Rules are read and having been approved are ordered to be printed.

At a General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held at the Society's Rooms at the College on Monday the 28th November 1842.

The Secretary stated that this Meeting of the Society was called by the Committee for the purpose, amongst other things, of obtaining the sanction of the Society, to the alteration and amendment of some of the Rules of the Society which in the opinion of the Committee had become necessary, and which if sanctioned would be printed in the Catalogue now in the press, the supervision of which had been undertaken by the Rev. G. Knox.

J. Minchin Esq. then proposed that the thanks of the Society be given to Dr. Jerdon and Captain Newbold for the very able manner in which they had arranged and classified the Geological specimens, in the possession of the Society.

Resolved.—That the Secretary be requested in the name of the Society, to subscribe to the Quarto edition of the work now publishing by Dr. Jerdon and called " A series of fifty coloured lithographic Drawings of Indian Birds" which being seconded by N. B. Acworth Esq. was unanimously carried.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Tuesday the 20th December 1842.

The Rev. G. Knox produces the new Catalogue. The committee desire to record their grateful thanks to the Rev. G. Knox for the trouble and pains he has taken in the preparation of it.

Resolved.—That a notification be published in the papers stating that the new Catalogues are ready for distribution to Subscribers who are re-

quested to send to the Library for them. That a copy be sent to the Editor of the Spectator requesting him to bring the *objects* and *terms* of the Society to notice in an Editorial and stating that it is the intention of the Society to continue the publication of the Journal in a modified shape.

Resolved.—That copies of the Journal containing the Reports on the Mackenzie M.S.S. be sent to Mr. Eastwick of the Bombay Army who has kindly offered to translate some of them.

Resolved.—That after the selection from the rejected books for the Garrison Library is made by Captain Worster the remainder be sent to Messrs. Franck and Co. for sale by auction.

Resolved.—That copies of the letter and enclosure received from the Bengal Asiatic Society be also forwarded to the following Gentlemen in addition to those mentioned in the proceedings of last month.

Captain John Campbell.
all Civil Engineers
and
Officers on Survey.

At an Annual General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held at the College on Monday the 30th January 1843.

The Secretary laid before the Meeting abstract statements of the Funds of the Society in both the departments from which it appeared that in the General department after payment of disbursements to the extent of Rupees 5389 6 4 during the past year there was a balance of Rupees 651 3 11 in its favor and that in the Asiatic Department there was a balance in its favor in the hands of the Agents of Rupees 69 3 ,, which sum the Secretary stated had in accordance with the existing Rules of the Society been transferred to the general Department as all donations and subscriptions are in future to form one fund.

The following donations having been made to the Society, since the last annual General Meeting the thanks of the Society were voted to the donors:

A compilation of Papers on the spread of useful plants in India presented by the Madras Government.

Survey of Mergui Harbour by Richard Lloyd Esq. . . . . do.
Report on the Ganges Canal . . . . do

Report upon the Khonds of Ganjam and Cuttack by Lieutenant Macpherson.

Hodgson's Illustrations of the Literature and Religion of the Buddhists............................ .... the author.

Five volumes of German books on the Military Code of the Prussian Army by Lieutenant Colonel Alexander.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, on Friday Evening the 21*st April* 1843.

Read letter from Captain Newbold dated Kurnool 20th March 1843 acknowledging the receipt of the communication dated 14th March last and its enclosure forwarded to him by the Committee.

Captain Newbold begs to acknowledge the receipt of the communication dated 14th Instant and its enclosure from the Managing Committee M. B. R. A. S.

He presumes that the suggestion thrown out by Dr. Jerdon and himself in their joint report on the collection of minerals belonging to the Society, for establishing an independent Museum of Economic Geology at Madras—is not likely to be matured (?) and will be most happy to forward the views of the sister Society at Calcutta, as far as is in his humble means.

Some years ago he had the honor of presenting the Madras Society with a number of of MSS.and copies of inscriptions on stones chiefly from Bijanugger and other places in the Ceded Districts, Canara, Mysore, Sravan-Belgola, under condition, as far as he recollects that a *Catalogue raisonnee* should be made, and copies granted him. He would feel much obliged by copies as he has promised them to the Asiatic Society of Paris.

He would also feel grateful if the Managing Committee would supply him with the last twelve numbers of the Nouveau Journal Asiatique de Paris as soon as out of circulation at Madras. Also the two last bound volumes of that Journal which he requires for reference. They shall be returned carefully as soon as done with.

Camp Gongondla—Kurnool, March 20*th* 1843.

With reference to the establishment of a Museum of Economic Geology,

Proposed by Walter Elliot Esq. that Dr. Cole and Captain Best report on this matter at the next meeting.

Walter Elliot Esqr. states that he will be prepared to circulate a notice on the Canarese papers before the next meeting.

Read letter from the same Gentleman, dated Kurnool 24th March 1843 bringing to the notice of the Committee that a considerable portion of the Mackenzie M.S. S. are still lying unreported on in the archives of the India House.

Resolved,—that J. C. Morris Esq. and Walter Elliot Esq. report on the subject and that the Secretary be requested to address Captain Newbold for further particulars.

Read a letter from the Rev. G. Knox, dated 10th April 1843 forwarding for presentation to the Society a volume of poems by his brother entitled " Giotto and Francesca and other poems."

Resolved,—that the Secretary be requested to convey the acknowledgments of the Society for the same.

The Secretary lays before the Meeting a communication in Telugu, received from M. Annuntacharry Bramin dated 14th April 1843 containing Verses in praise of the Right Honorable Lord Elphinstone.

Resolved,—that the Secretary be requested to thank the author for the same.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held on Thursday Evening the 11*th May* 1843.

Read letter from the Honorary Secretary to the Royal Asiatic Society dated London 13th February 1843. Stating that the Society has under consideration of enlarging the scope of their Journal and requesting the Members of the Branch Society and their friends and correspondents would furnish the Royal Asiatic Society with informations of interest to Oriental literature for publication in it's Journal.

Resolved,—that the Secretary be requested to assure the Secretary of the Royal Asiatic Society of their anxiety to forward the views of the Society and that they will use their best endeavours for that purpose.

Read a letter from Lieutenant Eastwick of the Bombay Army dated 17th April 1843, presenting to the Society through Walter Elliot Esq. a copy of his Vocabulary of the Scinde language.

Resolved that the thanks of the Society be communicated to Captain Eastwick.

Walter Elliot Esq. lays before the Meeting the following proposals for printing the Journal, together with a list of the old subscribers still in the Presidency.

Memo.

Assuming that the Journal will contain about 150 pages 8 vo at 14 annas per page for any number of copies not exceeding.. 300	131	4	0
Superfine printing demy paper for 200 copies 3 Rms. 18 Qrs. 3 sheet 12½ Rupees per Ream	48	13	3
To Stitching and cutting in coloured paper wrappers at 1 anna each	12	8	0
	192	9	3

Tabular pages will be charged at Rs. 1 4 0 per page.
The plates will form a separate charge.

(Signed) R. W. THORPE
Supt. V. M. Press.

Estimate on preceding 3 Plates at 2 Rupees	6	0	0
	198	9	3
From subscribers to 150 copies at 1½ Rupees	225	2	0
Remain..	26	6	9

to cover deficiencies and leaving 50 copies for distribution. Contributors also will expect a few spare impressions of articles sent by them.

Memorandum for Walter Elliot Esq.

The undersigned would be happy to undertake the printing &c. of the Madras Journal of Literature and Science on the following terms Viz.

Printing a N°. to consist of 200 copies of 150 Pages royal 8 vo in new bourgeois type	131	4	0
Supplying paper for do	54	11	0
Covering do with coloured paper stitching &c.	12	8	0
Rupees	198	7	0

This amount includes every charge excepting for plates: as the asylum Press has no Lithographic Department, these had better be executed at the Government Lithographic Press, where the work would probably be performed either gratuitously, or at a very low rate of charge.

Should a smaller number of copies be required than 200 the charge would be proportionately less for paper, covering stitching &c. the charge for printing would be the same.

Resolved.—that a Notice be circulated to the old Subscribers requesting their continued support to the renewed publication of the Journal under the modified form now proposed and at a cost not exceeding 1½ or 2 Rupees per number, also that steps be taken to procure additional subscribers at out stations by the dispatch of printed circulars to every station and by the publication of an Advertisement in the Government Gazette and the Spectator Newspapers.

The sub Committee appointed to take into consideration Captain Newbolds proposition for rendering the Mackenzie M. S. S. available to the public, having reported in favor of it.

Resolved.—that J. C. Morris Esq. be requested to draw up a distinct proposal to Government for the purpose of carrying out the object of the Society.

The sub Committee for the museum of Economic Geology lay before the meeting their Report which is read as follows:

There can be but one opinion as to the utility and desirableness of establishing a Museum of Economic Geology in Madras, as proposed by Captain Newbold, but it is quite certain that the Literary Seciety does not possess the means, constituted as it now is, of carrying such an object into effect.

An institution of the kind exists at Calcutta, designated the "*Museum of Economic Geology of India*" a brief sketch of the origin and constitution of which will serve to shew how impossible it would be for us here to carry out such a plan, without greatly increased resources

Originating (we believe) in a suggestion by Mr. Dela Beche Director of the Ordnance Geological Survey in England, the Honorable Court of Directors of the East India Company addressed a recommendation to the Government of Bengal that a Museum should be established in Calcutta, and offered to give a "moderate salary to any individual who might be found competent for the discharge of the duties of Curator;" Mr. Dela Beche having stated in his report on the subject "that a Laboratory and good analytic chemist appointed to it were among the earliest requisites," the Governor of Bengal at the recommendation of the Asiatic Society nominated Mr. Piddington Curatorwith a Salary of 250 Rupees per mensem and the Society made arrangements for the "efficient estab-

lishment of the Museum" on its premises, and erected buildings for its accomodation out of the funds of the Society. The correspondence and proceedings connected with these transactions may be seen in the 124th No. of the *Journal of the Asiatic Society of Bengal.*

If the Museum projected for Madras is to be on a scale commensurate with the importance and magnitude of the objects, it is clear that the Literary Society possesses neither the funds for its Establishment nor adequate space in its apartments for its accomodation. It is for the Committee to determine whether Government should be addressed on the subject, perhaps some member of the Society would consent to complete the arrangement of the minerals &c. now in the cabinet of the Society and to perform the duties of a Curator on a limited scale. Captain Smith of the Engineers, a Member of the Society, possesses all the qualifications required for such an office: and Mr. Ross the Assay Master and Dr. Middlemas the Deputy Assay Master, also Members, from the nature of their professional duties of course are qualified also for analytical investigations. In the meantime the Society being publicly known to possess a mineralogical Cabinet, to which it has invited donations, specimens continue to be received, and at any future time may be arranged with regard to their economic uses.

Resolved.—That the Sub-Committee be requested to prepare a representation to Government for the purpose of ascertaining whether they will afford the means of establishing a Museum of Economic Geology at Madras.

At a Meeting of the Managing Committee ef the Madras Literary Society and Auxiliary of the Royal Asiatic Society on Thursday Evening the 8th June, 1843.

Read letter from H. M. Blair Esqr. Principal collector of Canara dated 11th May 1843. Forwarding two boxes containing specimens of " Porcelain earth" found in the vicinity of Mangalore.

Resolved.—That Dr. Cole be requested to examine the specimens of porcelain earth with Dr. O'Shaughnessy's pamphlet and that the specimens be forwarded to Government with such observations as may appear necessary.

Read a letter from Captain T. J. Newbold dated 12th May 1843, soliciting that copies of the Sassanums and other inscriptions forwarded by him to the society be furnished to him or the originals returned; likewise

stating, that Col. Sykes promises to give a lift if the Government propose to the Court of Directors to establish a museum of economic geology provided it do not cause expense to the Government in curator and house room.

The Society have already resolved to address Government with reference to the resolution of the last meeting on the subject of a museum of economic geology.

The Secretary lays before the meeting prospectus of a work entitled physical geography of New South Wales and Van Diemans land in two volumes by Count Streliski, sent by Captain Best.

Resolved.—That further inquiries be made regarding the work, its price &c. from Captain Best.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society held on Friday Evening the 7th July 1843.

Read a letter from N. B. Acworth Esqr. dated 24th June 1840, mentioning that the Map of Arabia Petrœa is wanting in the 1st. Vol. of Robinsons Palestine although there is a notice of the publisher at the commencement of the work stating that it was not ready at the time of the publication of the work and that any purchaser returning the notice to Mr. Murray will have the map presented to him.

Resolved.—That the Society's Booksellers be furnished with the notice and requested to claim the map and transmit it

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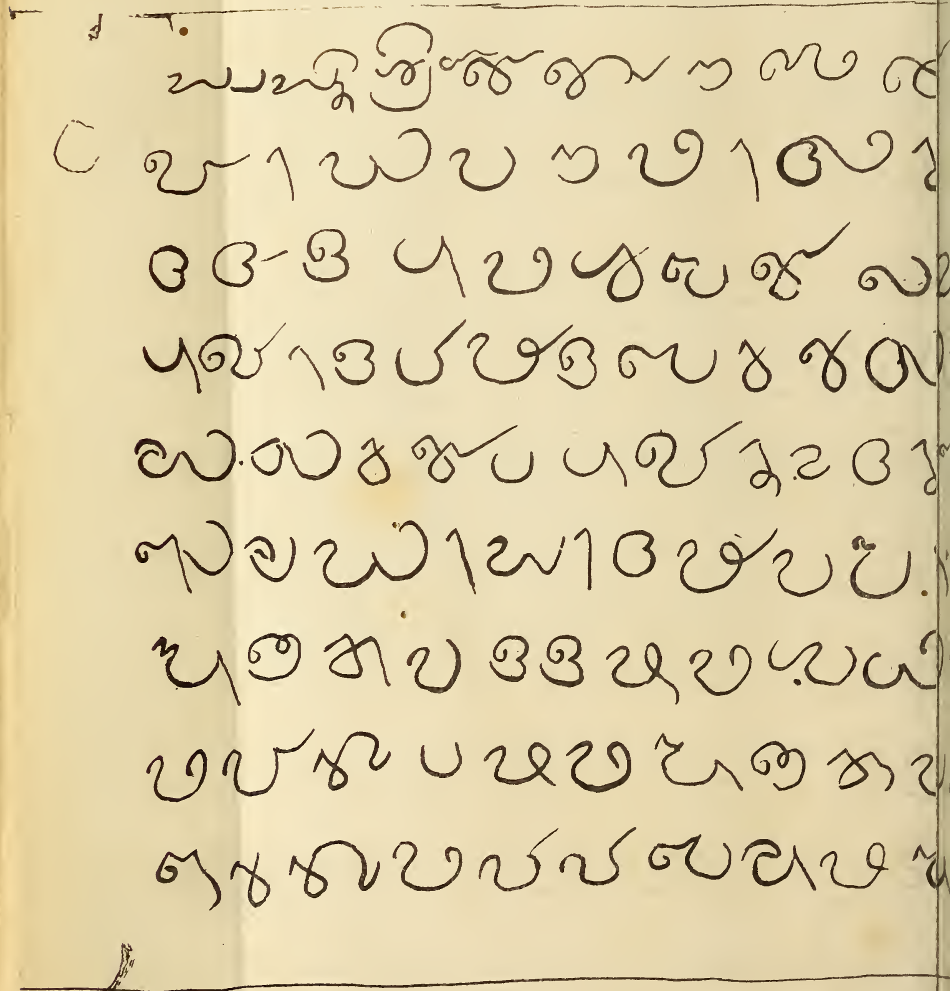
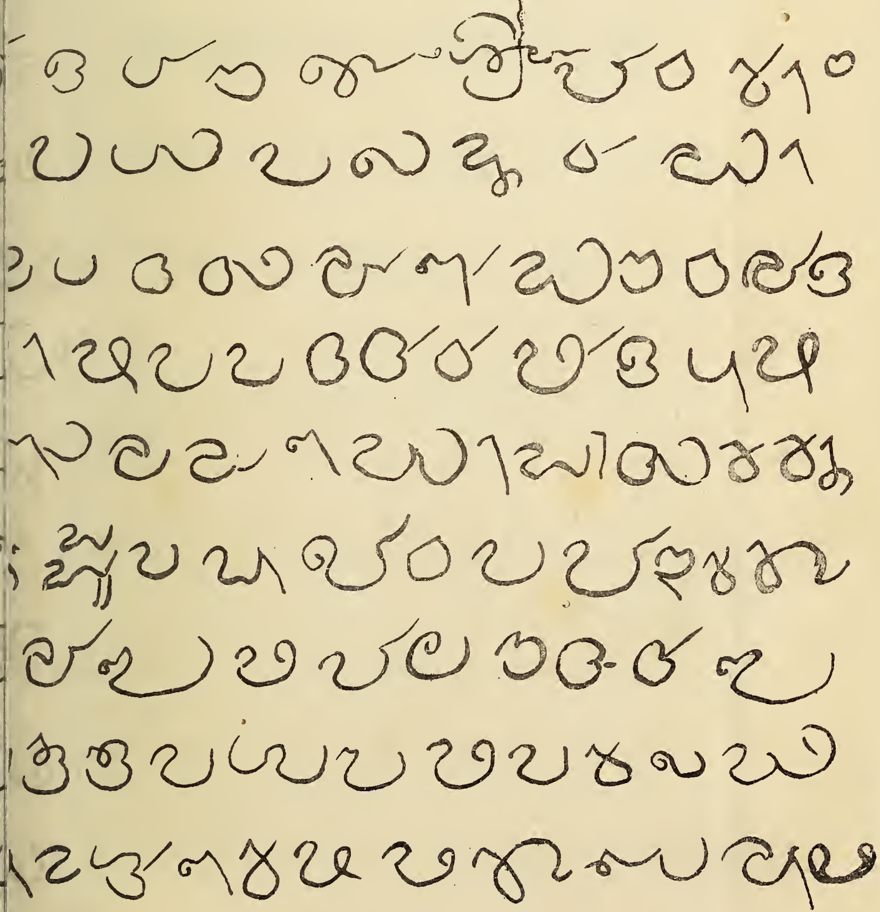
Facsimile of the Copper Grant bel



ging to the Jews of Cochin.



scrips^t

MADRAS JOURNAL

OF

LITERATURE AND SCIENCE.

No. 31.—*December*, 1844.

I.—*Analysis of the Copper Grant in possession of the Jews of Cochin. By the late* F. W. Ellis *of the Madras Civil Service.*

[Since the publication of No. 30 we have met with the following translation of the Jewish Sasanam by the late Mr. Ellis among some old papers in the College. The general interest of the subject and the high character of Mr. Ellis as a critical oriental scholar, will it is hoped be accepted as a sufficient apology for recurring to a subject which has already been so ably illustrated by Mr. Gundert, from whom also we have received a further highly valuable communication fully bearing out his happy suggestion of the true meaning of *Anjuwannam*. Mr. Gundert has likewise most kindly at our suggestion, furnished a translation of the Hebrew version of the Sasanam retained by the Jews, who have long lost all power of deciphering the original. This, with the facsimile of the deed itself made from an impression of the copper plates struck off at the Cottayam Press, with which we have been kindly furnished, renders this subject complete.]

സ്വസ്തി ശ്രീ

'Swasti Srí!' An invocation or salutation (namascāram) This phrase is found to head all inscriptions and ancient deeds on copper or stone, in Malabar. In the inscription it is written

in the Grantham characters: used by the *Tamuler* for the *Sanskrita* Language.

கோகோன்மை கொணடான்.

'The king of kings hath ordained it,' கொ and கொன mean, *a king;* the latter word would be used before a vowel, as in the present instance அமை is from அமைத்தல் which in the *Sadur agaradi* (*Tamil* dictionary) is interpreted by சமைத்தல் - செய்தல், *making*, *ordaining*; thus in the *Trivannoor* inscriptions we have திருவைக்கிரத்தின் அமைஞ்ஞுபூமி 'The land ordained, *set apart*, *appropriated*, for (supplying) an *agram* (*Sanskrita*: food for *Brahmans*).' அமைகொணடான; a compound in the 3d person of the preterite sense. The sentence, embraced between two marks, should contain a date of which more will be said in an another place.

ஸ்ரீபாற்கரன இரவிவன்மர்

'Srí Bháskaran Iravi Varmar' This is the name of the Prince. Bháskara, *the sun*, is written here in the *Tamul* characters பாற்கரன், The name of the 'Sun' is a common title given to Sovereign *Indian* Princes. In the present instance it is doubled; for இரவி (the *Tamil* mode of spelling the *Sanskrit* word *ravi*, (for *r* never properly begins a Tamil word,) also means *the sun*. *Varmar* is the title of Kings, as *Sarmar* is of the Brahmans. The termination is of the idiom of the *Tamuler*. These also write and spell the word வன்மர் *vanmar*, so also in ancient inscriptions I find தன்மம் and கன்மம் for *dharmmam* and *kharmmam*; as in the inscriptions in the *Avenashy* and *Denaikan-cottah* pagodas, in Coimbatoor country, which are written in the ancient Tamil character; an alphabet quite distinct, and different from the Jew's inscription, and others, those in Malabar.

திருவடிவல்

'(his) auspicious Foot!'

The feet of *the King*, *Preceptor*, *the Deity &c.* is always addressed. The exact force of the word வல annexed to திருவடி

I do not exactly know; but I leave it as I find it; it being authorized by the repetition of the phrase in numerous inscriptions that I have examined.

ஆருயிரத்தாண்டும்.

'In a hundred thousand places' i. e. Throughout an extended empire. The *Raja* appears to have been a Prince paramount. In this inscription at the end are cited, as witnesses, the names of numerous chiefs of minor principalities in Malabar. The word ஆண்டு which occurs in this passage has three meanings, viz. *place, a year,* and *a cycle* [that] *of* [sixty] *years.* Each meaning by a playfulness common to *Indian* writers are introduced in this passage, in the succeeding sentences.

செங்கோல்நடத்தியாளாநின்ற

'[when] weilding the sceptre, *or administering justice,* was reigning,'

செங்கோல் is *the sceptre of authority;* it also means நீதி *justice* [Sadur agaradi] யாளாநின்ற is the present participle.

யாண்டு இரண்டாமாணடைக்கெதிர்

'The year above the second Cycle.'

முபபத்தாறுமாண்டு

'The thirty-sixth year.'

முயிறிக்கொட்டு இருந்தருளியநாள்

'On the day that he tarried at Muyiri Kótta,'

Here the word அருளிய is used honorifically, as spoken of a high personage.

பிரஸாதிசசருளிய பிரஸாதமாவது

'The act of Grace which he was pleased to vouchsafe;—*to wit;*' In the word பிரஸாதம *joy, pleasure,* the Sanskrit *s,*

and long mark for ā, are retained; the latter is the same mark as that for the consonant *r* as in modern *tamul* letter ர for *r* and also for *ā* when conjoined with consonants. The word அருளிய is again introduced. The expression பிரஸாத மாவது has its termination formal and quite correct.

ஈஸுப்பு இறப்பாணுக்கு * * * * * கொடுத்தோம்

'To Issoopoo Irabbán * * * we have given *(allowed, permitted,)*' These are the *first* and *last* words of the second sentence of the Inscription. The first sentence may be rendered as follows; "The gracious act vouchsafed by the SovereignPrince Bháskara Iravi Varmar, in the 36th year of the 3d cycle, when tarrying in state at *Muyiri Kótta :* to wit."—The context of the second sentence is, 'we have given or allowed *so and so* to Joseph Rabbán.' Thus the name would be properly written in English. The vowel *i* before the word *Rabbán* is the *Tamul* idiom. The double *ssu* in *Joseph* is of the *Grantham* character. Thus it appears that the individual named here was not (merely) a *Rabbi* or *Rabba,* but dignified by the title *Rabbán,* the title, I understand, of the highest grade of the Jewish priesthood. The word *give* means here simply *to allow,* to permit; as it must often be understood in most of the *Indian* languages. In the *hiatus* kept in the last extracted sentence are embraced in detail *the privileges allowed,* composed of, in general, simple terms and abstract terms, kept in the nominative case, though governed by the verb *we-have-given;* and connected by the conjunctive particle உம, *and,* throughout. *Had the identical things mentioned been given, as a gift, it would certainly have been particularized, so far, by the use of the accusative case, throughout.*

The following periods contain the things privileged.

அஞ்சுவண்ணமும்

'(and) five degrees *of legitimate* title.'

This first period, seems on the outset to contain a difficulty,

in its very apparent unmeaningness, being simply *five kinds* or *degrees;* but it is subsequently fully explained, by a double repetion, and by the express mention of *His self, his male issue, his female issue, his nephews,* and *the nephews of his daughters.* The first thing would be, as naturally appears fit, to ascertain and establish his (Issoopoo Irabbán's) title and claims in this granted act, in his own person and that of his descendants.

வெடியாலும பாயனத்தாலும பாகுடமும

'and tribute, with awe and oblations.'

பாகுடம is அரசிறை (Sadur argaradi) *tribute payed to the* Sovereign. Which the Grantee in this Act was permitted (as I understand it) to receive in his own person. The words வெடியாலும and பா (or வா) யனத்தாலும I am by no means satisfied about; they are both in the ablative or instrumental case and united by the conjective particle உம். Also வெடி means *fear* and பாயனம for உபாயனம is *reverence* and *offerings.* The expressions are not however of much importance, being merely connectives with and subservient to the word '*tribute:*' about which no doubt can rest.

அஞ்சுவண்ணபபேறும

'and the profits (rights or enjoyments) of the five classes.'

The word பேறு which is frequently used in this document means இலாபம-அனுபோகம-அனுபவம-(Sadur agaradi): and is in common use to this day in Malabar in publick instruments. The *five classes* [a local use or custom] is said to mean the five chief trades, *viz. carpenters, braziers, blacksmiths, goldsmiths,* and *toddydrawers.* We must be content with this explanation, in the absence of the possibility of improving our information on a mere local matter and custom of 1500 years agone. Sure however it is that the above five occupations are linked together as *the five crafts* to this day, in Malabar.

பகல்விளக்கும

' and day-lamps'

The use of lights by day is the privilege of the chapels—royal or other Pagodas. But பகல்விளக்கு has another meaning in the* details of Malabar, viz. a certain ceremony of the nature of *a Mass* performed in the Pagodas: *thus* people on ordinary domestick occasions or for penance, go themselves or send to cause the performance of a *pagel-vilakkah* as they term it: probably from burning candles being used at the ceremony. The privilege appears to be that of conducting religious observances by day or by night without molestation, where burning censors by day would interfere with exclusive privileges.

பாவாடையும

' and *long* or *broad* vests (a dress, or flowing full garment, as worn by foreigners)'

அந்தோளகமும

' and palanquins,'

குடையும்

' and umbrellas,'

வடுகப்பறையும்

' and drums, [a kind of drum.]'

பறை is a kind of musical instrument (Sadur agaradi)

காகாளமும்

' and trumpets'

காளம் or காகளம் means *a trumpet.* In the original there is an error one way: either in the repetition of the கா or in making the second syllable long i. e. கா for க; or perhaps it may have been an ancient form of the word.

* A word left out in the original, probably *religious* or *ceremonial.*

இடுவெடியும்

'and tabors, (a small kind of drum)'

The term is still used in Malabar.

தொாணமும்

'and garlands [probably for the person]'

தொரணவிதானமும

'and garlands: *over the roads* &c.'

Here the word விதானம—மேற்கட்டி *fastening above* (Sadur agaradi) is annexed to the former word தொரணம, there used simply.

கரவும [or the க may be a ச and the வு may be a பு] also மிகுகும;
What these two nouns mean, I have been, hitherto, unable to establish.

எழுவத்திரண்டுவீடு பேறும்

'and seventy-two free homesteads'

the word வீடுபேறும is a common term now in use technically in Malabar. It has the meaning simply of *house*, but with the notion of the proprietary right inherent in the term. Here, not the *free houses* are given; but rather the freedom of the houses only is guaranteed.

கூடக்கொடுத்தோம

'all together we have given'

The word கூட is merely introduced as collecting and combining all the above articles under the government of the word கொடுத்தோம. The second complete sentence ends here.

உலகுந்துலாகூலியும் விட்டோம்.

'and we have relinquished taxes and transfer—duties.'

உலகு or சுங்கம are *customs, duties;* the latter is used for

sea-customs at this day. The two terms are both derived from the *Sanskrita* ശുല്കം *sulka.* The term which I have rendered *transfer-duties*—is literally *dues-by-weight*, some local custom, not known by that name at this day.

மற்றும நகரத்தில்குடிகளகோயில்க்கு இறுக்குமது

'Moreover the taxes which are paid by the houses of the city, to the Palace.' The Palaces of the *Rajahs* in *Malabar* are called *Koyil* or *Kovilagum*, or *Kshetram*, literally *Chapels Royal. It* means here the royal exchequer called in the present day the *pandáram* பண்டாரம a word corrupted from ഭാണ്ഡാഗാരം having the same meaning. The word இறுக்குமது is a participial noun of the future tense (which we render by the present) from இறுக்கிறது *to pay taxes*

இவன் இறுமையும

'his [Joseph's] not paying it [*the taxes*: by reason of his exemptions thro' this act] *and*'

பெறும

'and the [beforementioned] privileges'

அதுபெறவுமாக

'In order that he may enjoy it.'

சசெப்பேட்டோடும செய்துகொடுத்தோம

'We have executed and given it with (these) copper leaves.'

The compound செப்பேடு is from செம்பு *copper* and ஏடு *a leaf;* which united is செபபெடு; The common word in Malabar now in use is செமபொலை [so pronounced: written *Malabaricè* ചെമ്പോല or in sanskrit താമ്രശാസനം *Támra—Sásanam.*]

அஞ்சுவண்ணம உடையு

(being) in five degrees :—*namely*.'

After this follows the explanation of the five degrees of persons in natural descent, who are to benefit by the grant. The form உடைய I have not met with before. It is used participially or obsoletely.

ஈஸுப்பு இறப்பானுக்கும்

'[and] to Joseph Rabbán himself,'

இவனஸநததிரூண் மக்கள்க்குமபேண்மககளககும

'and his progeny, his male children and his female children,

இவன்மருமக்கள்ககும

'and to his nephews,'

பேண்மககளை கொணட மருமக்கள்க்கும

'and to the *nephews* of his daughters,'

ஸநததிப்பிரகிரிதி

'[in] natural succession.'

உலகும சநதிரனும் உள்ளளவும அஞ்சுவண்ணம ஸந்ததிப்பிரகிரிதி ஸ்ரீ,

'an hereditary succession in these five degrees, so long as the earth and the moon remain. Srí!'

After this there follow the names of several Kings or Princes in Malabar who are cited, to recognise the act; and the name of these personages are still to be found in the titles of the *Swarúpas* or dynasties, presently in the Province of *Kérala*. Each title is introduced by the phrase,

இவ்வரி அறிவேன

'I know (acknowledge) this Deed.'

Here இவ்வரி is the proper form for இந்தவரி as usual; வரி is literally *a line*, but is used for *a writing*, and technically for *a deed*. [The repetition of this sentence before each name will be avoided here.]

வேணாடுடையகோவர்த்தனமாத்தாண்டன்

‘ Góvarddhana Marttándan (the Prince of Vénádu ; *now called Vénátta-kara.*’

‘ Kotai Srí Kanthan of Vénápalináda ; *now called Verapoli.*’

ஏறுளநாடுடையமானவேபலமானவியன

‘ Mánavépala Mánavíryan of Erálanáda; *the present Zamorin.*’

வளளுவனாடுடையஇராயிரஞசாத்தன

‘ Iráyaran Cháttan of Valloova Náda; *at present Walloova Nadd.*’

நடும்புதையூர்நாடுடையகொதையிரவி.

‘ Kotai Iravi Nedoomputiyoor ; *now called Nedumbrayoor.*’

கிழபபடைநாயகம்செந்நின்றமூர்க்கஞசாத்தன்

‘ Múrkkan Cháttan, Resident of Kízh-padai-náyakam.’

வனறகைசெரிக்கணடன குனறபபொழனுய கிழவாயக கேளபபனெழுதது.

‘ The hand writing of Pózhanáya. Kízhaváya Késllappan, engraved by Vandragai-Sherry Kandan.’

Such is a distinct analysis of the Jew’s Grant of Cochin, letter for letter, word for word, sentence for sentence. It may, therefore, be translated freely, thus: “Swasti Sri! A Royal Edict. The Act of Privilege vouchsafed by Srí Bháskara Iravi Varma, when he tarried at Muyirí-Kóttah, in the 36th year of the 3d Cycle, when ruling the land, dispensing justice far and wide throughout his dominions. We have permitted Joseph Rabbán, an indisputed line of descent in five degrees of persons ; to receive from those subject to his authority, tribute with awe and submission. We allow the exercise and profits of all the crafts ; he may use

burning lights by day; long raiment, palanquins, umbrellas, drums, trumpets, tambourins, and garlands for the person and for the roads; and we permit the free property of seventy-two houses. And we relinquish all rates and customs. Moreover other and whatever taxes paid by the houses in the city to the Royal Exchequer he is exempted from; and in order to guarantee to him this exemption, and all the privileges, we have executed this deed on copper-leaves: To Joseph Rabbán himself, his male children, his female children, his nephews, and those (the descendants) of his daughters; in natural succession, so long as the earth and the moon remain. Srí! I witness this deed, &c. &c. &c."

II.—*Hebrew version of the Jewish Sasanam with translation into English; together with a notice of an ancient Malayalim Poem, called the Song or Legend of Payanúr. By the Rev. H. Gundert.*

בשלום האלוה הוא מלך שעשה כרצונו הארץ ולורה
אלוה נשאתי ידי אירוה ברמין שגוזר בפרטגמיא זה שהרבה
מאות אלף שנים נהג הממשלה שנה ושני שנים בזה היום
יושב בכנגנור וגוזר לו 36 שנים למלכותי גזרתי בעמיע ובגבורה״
הירשתי ליוסף רבן בגבורה ובעמיץ חמשה מיני צבע ״ ותותא ״
ורכיבת פיל וסוס ״ וקריאת לפנות הדרך ״ ולגייר מן המשה
העמות ״ נר היום ״ וגם מצעות הארץ ״ ומצעות הקישוטים
לנוי ״ מגדל הפורה ״ צל ״ ודאמן ״ והצוצרות ׳תוף המכה
בשני עצים ״ זה הכל נתתי לו ולשבעים ושנים בתים ··
ושביתת ארץ ומאזנים ושכירותם עזב ׳״ ושאר המדינות שיש
בו תושבים ובתי כנסיות יהיה הוא נשיא וראש ומושל ״
בלי שום שינוי וגרעון וערעור עשה טל הנחושת ונתן
לאדון של המשה צבעים הוא יוסף רבן לו ולזרעו בנים
יבגות חתן וכלה ״ כל זמן שזרעו יים בעולםוכל זמן —
קיים י אלו הנזכרים קיי ים ״ ויברך אלוהלזו

העדים ״ צינד כובירטין מטאדין ״ בנבילה נאדוכומין

שיריכנדין ״ חידלנא דגמנא ביגריין׳בלוד נאד אירברין

שטן. ״ נידטרהור כולא אירוי ״פי לאפאטו מידכין שטיין ״

וארה שירי כנדין ״והסופר כילפיין ······

In the peace of God, the king, who according to his pleasure made the earth, and to this God have I lifted up my hand. I, *Erech Barmen,* who rule as Sovereign for many 10,000 years, and have held the Government a year, and years of years, sitting this day in *Canganúr* and decreeing, in the 36th year of my kingdom (or perhaps more literally "decreeing 36 years to my kingdom") I have decreed in might and power,—I in power and might, have made *Joseph Rabbán* possessor of the five kinds of colours—and (have given him) the *Tota* (a sort of Palankin ?)—and the use of elephants and horses—and the right of calling at the corners of the ways—and of converting from 5 nations—the light by day—also *spreadings* (of cloths) on the ground, and *spreadings* of lines (measuring lines or ornamental hangings ?) at the tower (or scaffold ?—"*lanúy*" and "*hoppóreh*" are left untranslated) the umbrella—the *Dáman* (unintelligible to the Cochin Jews) the trumpets—and the drum beaten with two sticks. All this I have given to him and to the 72 houses and the revenue of the land and balances their hire has he relinquished. As for the rest of the cities wherein there are (Jewish) colonists and Synagogues, he shall be their prince and head, and ruler without any encroachments or interference or oppression (wherefore) he made the copper-plate and gave it to the Lord of the 5 colours, even *Joseph Rabbán,* to him and to his seed, sons and daughters, sons-in-law and daughters-in-law, all the time that his seed exist in the world, and all the time that the moon stands; shall, what is here recorded, be standing, (in force). And he blessed God. These the witnesses: *Enad Cobarden Mattanden—Benbelenadu Cothan Sri Canden—Kerala nadu Mana Bigarin—Balod nad Erbaren*

Shatten—Neduparur (and ט mistakes for ב and פ) *Cota Erani—Kelapatu Múdcan Shattan*—and *Talah Sheri* (ךּ mistake for ל) *Candan*—and the writer *Kelappên.*

N. B. *Perimpadappu* the King of *Qogin (Cochi)* is not recorded in this (list) because he (the *Perumal*) settled him as his heir in his stead.

On the above Mr. Gundert observes: "The Hebrew translator seems neither to have understood much of the original Tamil nor to have cared about rendering it faithfully. The Hebrew itself is a bad specimen of Cochin learning. The MS. from which it was copied may be about a hundred years old, and the translation was probably made with a view of satisfying the inquiries of the Dutch Officers or the Amsterdam Jews. If it is to be published it must be rather to satisfy curiosity than to throw any additional light on the matter."

Mr. Gundert then proceeds: "I have the pleasure of adding the only confirmation from native writings, I have met with, for the conjecture which I have formed about *Anjuwannam.* As a humble admirer only of Mr. Ellis' attainments in the Peninsular languages, I may venture to say, that if he had been lucky enough to see the Syrian documents, he would not have sought for a meaning in what he would have discovered to be a proper name. I also, some years ago, tried several translations of the word, before I thought of taking it for the name of a territory [chiefly on account of the parallelisms. *Anchuwannam-udaya*, *Issuppu*, and *Venad-udaya*, &c.] That conjecture became strengthened by subsequent acquaintance with the native tenures and the wording of deeds. Princely privileges I saw, could never have been granted but as accessories to a *Bhumidanam*, till at last, on meeting with the Syrian documents in Nov. last, (1843), I was convinced that their analogies placed the fact of *Anjuwannam* as a name and the rendering I have adopted of the 72 *Viduperu*, beyond a doubt. Objection, it is true, may be taken to the circumstance, that no recollection of the name is to be found among a people like the Jews known to be so much more tenacious of old reminiscences than the Syrians. But the fragment of the *Payanúr* poem, which I obtained from a Native at *Taliparámbu*, who gave it as the oldest and most worthless counter-present he could make to me, proves the name of *Anjuwannam*, as one of the four immigrated merchant-tribes, to have once been known even N. of Mt. Eli. This

poem is certainly the oldest specimen of *Malayalim* composition which I have seen; the language is rich and bold, evidently of a time when the infusions from *Sanskrit* had not reduced the energy of the tongue, by cramping it with hosts of unmeaning participles. But the copy which I have, is so full of antiquated terms and so disfigured by errors of transcription, that I could not now undertake to give a correct version of the whole, valuable as such a picture of bygone times would doubtless be. Perhaps, I may on another excursion to *Payanur* and the site of the forgotten *Cachilpatnam*, fall in with another copy. That the Jews should have forgotten the name of their original settlement is the less surprising, because since the destruction of their fort near *Codungalur*, they avoid the place so carefully that they will not even eat on the western bank of the river. A *Cranganore* Brahmin told me that when he gives rice to a Jewish cooly, he invariably paddles himself to the eastern shore, there to cook and eat it: but whenever a Jew is buried, earth fetched from *Codungalur* is thrown on the corpse—all on account of an old oath. Does not this circumstance tend to prove that they consider that ground, in the terms of the grant, as their everlasting inheritance?"

The Legend of Payanur—N. L. 12° 5′ *near Cavay.*

Nilakési, a woman of good family, an inhabitant of a place called *Sivapérúr (Trichoor?)* a town famous for female beauty, could not obtain a son though married to several men. She resolves therefore to do penance by wandering about as a beggar, and comes to the famous emporium *Cachilpatnam* (near *Mount Dilli*), where the chief of the place, a merchant named *Nambu Chetti,* or *Chómbu Chetti,* enters into conversation with her, advises her to perform certain vows, and then takes her to his palace as his lawful wife. A son is born, and receives the name of *Nambúsari Aren,* and a feast of rejoicing is celebrated on the 41st day on the plain of *Payanur*. At that time *Nilakési's* brothers happened to go up the coast in a ship. They hear the music, and disembark to see the play. But as they climb up a wall of the temple, some spectators expostulate with them. They call themselves *Culavánier* (merchants) who cannot be expected

to know the customs of the place, and appeal to the chief. He comes but applies his rod to the head of one, a scuffle ensues, and the strangers are killed.

Nilakési when acquainted with the murder of her brothers, leaves the palace and her son, and again wanders forth begging. The son grows up and is instructed by his father in all the arts of trade and ship-building (given in interesting detail, full of obsolete words). The ship being at length launched and manned with *Vappúrawas* (?) *Pandias, Chonakas, Chólias,* and also with one *Yavanaka,* the merchants start fearlessly on a voyage first to *Púmpatna,* round *Mt. Eli,* then passing the *Mála* (*-Dives*) into the *Tani-punul-áru* (river) to the town *Púvenkápatna,* proceed farther on to the *Cavari,* from whence they sail into another sea to other shores, till they reach the gold mountains *(ponmala)* where they exchange all their cargo for gold, return and land their goods in *Cachilpatnam,* store them in a new magazine, and dismiss the mariners with their shares. After this, when the father and son are amusing themselves with playing chess, a female devotee is announced who is not satisfied with alms, but wants to see the young merchant. Then follows a long and mysterious conversation. She invites him urgently to be present at a night-feast of women at *Payanur.* He promises, but cannot afterwards persuade his father to give him leave, who fears a plot and danger; but the son persisting in importuning him, and at last prostrating himself, he consents.

Here follows an extract, as a specimen :

നില്ലാതെവീണുനമസ്കരിച്ചാൻ
നിന്നാണതമ്മപ്പാപൊകുന്നെന

" I swear by thee, O father, I must go."

പൊവാൻവിലക്കിനെൻവഴിത്തിരക്കം
പൊകെഴിപ്പാൻത്തരുതാങ്ങുതരിപ്പൊൾ

ചാവാളു തെപ്പൊചെന്നിഞ്ഞകലത്തെപ്പൊവ്വും
ചങ്ങാതംവെണംവെന്തിക്കഴിപ്പൊൾ
കൊവാതലച്ചെട്ടിഞ്ചുവണ്ണം
ക്രുട്ടംമണിക്കിരാമത്താർമക്കൾ
നമ്മളാൽനാലനകരത്തിലും
നാലരെതെൾക്കുടിക്കളെചൊന്നാർ

The Father: "I have opposed thee to the utmost, but now I must not prevent thy going—thou goest far away like dying men—strong guards (or companions) are now required—take the children of the *Govatala Chetti,* of *Anjuwaṇnam* and of the *Manigrama,* people who, together with ourselves, are the four (classes of) colonists in the four towns." ((ക്രുട്ടം perhaps (ക്രുട്ടം or (ക്രൂട്ടം?)

നാലർക്കുടിക്കെചൊന്നാരെകൊണ്ടാർ
അന്നാട്ടിൽവാട്ടിണസ്വാമിമക്കൾ
തൊഴർവതിനാലുവക്കിരിയും
തൊല്പിപ്പാനില്ലാഇന്നാട്ടിൽത്തുമ്പാ
കാലെവിടിച്ചിഴക്കിലുംഞാൻ
കച്ചില്പട്ടിൽവരെന്നിക്കണ്ണുറങ്ങെൻ

" They took of the four classes of colonists, the sons (or servants) of the town-lord in *that* country, fourteen companions, a noble household, not to be outwitted (or defeated) by any in *this* country (and, says the son) " though I should be dragged by the foot, I shall return (to-morrow) to *Cachilpatnam,* nor shall this eye sleep (to-night.)"

Upon this the father advises them to take some merchandize along with them in the ship as for a fair, and the poem,

evidently a fragment closes in the 104th Sloka, with an enumeration of wares, replete with obscure terms, free from any anachronisms.

I believe that the people of *Anjuwannam* and *Manigrámmam* here mentioned as belonging to *yonder* country, can only mean Jews and Christians, (or Manicheans) who, for commerce sake, settled also beyond the *Perumál's* territories. It would be interesting to know who the two other classes are. In the mean time, the existence of four trading communities in the old *Kérala* seems to be proved, and the നാലുരിചറ് of the 1st Syrian document, receives some elucidation from this incidental allusion.

III.—*Narrative of the last outbreak and final subjugation of the Southern Poligars. By the late Mr. George A. Hughes, of Tachinore in Tinnevelly.*

[Mr. Hughes, an Indo-British gentleman, well known for his commercial enterprise and successful speculations in the southern districts, was the son of Mr. Hughes, of the Madras Civil Service, formerly Paymaster of Madura. He was sent to England at an early age, and received an excellent education under the charge of his uncle, Dr. Hughes, Principal of Jesus College, Cambridge. On his return to India, after serving as a clerk under the Resident of Travancore, and in the office of Mr. S. R. Lushington, Collector of the Southern Poligar Peishcush, he was appointed by Colonel Bannerman, the Officer entrusted with the charge of quelling the Poligar insurrection of 1779, to be Malabar and Gentoo Interpreter with the force, on the pay and allowances of a Captain, which was confirmed by Government on the 26th September, 1799. He continued in the same situation under Colonel Agnew in 1801, and afterwards in 1808 he accompanied the force under General St. Leger, during the Travancore war, and received the thanks of Government for his services, on the 27th February, 1809. In the interim he had engaged in commercial pursuits and entered into partnership with Mr. Charles Wallace Young, who between 1805 and 1808, obtained a lease of a large extent of waste land for the cultivation of Coffee, Indigo, and Cotton, in Tinnevelly, at an annual rent of 2000 Rupees, to continue to the close of the Company's Charter.

On the death of Mr. Young, in the latter part of 1809, Mr. Hughes succeeded to the lease, as assignee of that gentleman; and on the expiration of the Charter, the grant was renewed in 1814, on the same terms, for the period of the next Charter. Mr. Hughes likewise purchased the Colattoor and Cudalgudi Mootahs, and continued engaged in various speculations with fluctuating success, until his death, which took place on the 26th February, 1835.] W.

The year 1799 is memorable in the annals of Tinnevelly, for a daring rebellion on the part of several of the Poligars against the British Government, which was then but of recent establishment. These Chieftains, impatient of the order and restraint which the efficient Government now established over them, imposed on their turbulent habits, looked forward with keen desire for some opportunity to return to that contumacious attitude, that they had almost always held towards the Nabob's Government. This opportunity was fully opened to them by the absence of the Grand Army against Seringapatam, in the year above-mentioned, and the temptation was not to be resisted. Four months before the fall of that capital, the Southern Provinces were in a most agitated and critical state, and nothing but that great event saved us from general tumult and disturbance.

At the head of the disaffected Chieftains, stood the Poligar of Panjahlumcoorchey. This person wholly unmindful of the marked lenity which the Government had shown to him for former offences, was engaged many months in exciting a spirit of revolt, and for this purpose, he moved with a large body of armed retainers, first to the southern part of Ramnad, and then to Shivagherry. Our well remembered Governor, Mr. Lushington, held then the important office of Collector of the Peishcush of the Southern Poligars, and by him the Poligar was formally and solemnly warned of the desperate and criminal course in which he was now engaged. The moment did not admit of a more decided course, and intelligence of the eventful 4th of May soon reached the south, and all was calm again immediately.

The Government having now had ample conviction of the dangerous power, the treacherous disposition, and the licentious habits of this formidable body of men, found it indispensable for the peace and welfare of the country, to enter upon a complete reform of their character and condition. After the settlement of affairs in Mysore, a considerable force was despatched to Tinnevelly to effect this important object, and the command of it confided to Major Bannerman, an officer of high reputation, and of long service in the southern provinces.

Major Bannerman surrounded the fort of Panjahlumcoorchey by a prompt movement early in September 1799. His detachment, the morning he appeared before the place, consisted of I think, eight or ten companies of two native corps that had moved the preceding night from Kytaur, under Captain O'Reilly of the 3d regiment N. I. and some details of a provincial corps (raised by Lieuteant Knowles) which had marched in one night from Palamcottah under the Major's own command, and further, a squadron of cavalry under Lieutenant Dallas, that had made a forced march from Sauttoor. It was the object of these simultaneous and quick movements, to surprise the Poligar in his fort before he might have time to retire, since some apprehensions were entertained that he and all the malcontents of the country, might repair to the much stronger position of Shivagherry, all Punjahlumcoorchey being a very open plain. Under this impression, the assault of the place was resolved on immediately, although other native details and His Majesty's 19th regiment of foot appointed to the service, had not yet come up.

The Poligar having refused all unconditional surrender, and indeed showing no signs whatever of submission, and having exceeded the time allowed him to determine, the assault commenced by Captain O'Reilly, being directed with his column to blow open the principal gate (aided by a small party of Bengal artillery brought over from Ceylon) and to enter the place at that point, and Captain C. D. Bruce was

directed with the regiment under his command, the 3d N. I., to scale the works at some accessible point to the right or left of the gate, much of the wall having at a distance a dilapidated appearance. The assailants made the most persevering efforts to gain the place, but were repulsed with severe loss, particularly at the gate, which as it had been partially blown open, more hope was entertained of success at that point. The garrison was numerous and resolute throughout, and round the gate within there was an impenetrable host of spear men, and here we had four of our officers slain. The enemy's fire was less considered, but on this, as on every subsequent affair with these Poligars, our troops had abundant proof of their formidable skill in the use of their own favorite weapon, the spear.

His Majesty's 19th Foot came up shortly after the assault, and every thing was in rapid progress for another attack, when the Poligar, despairing of further resistance, abandoned his fort and fled with a few retainers, first to Sevagungah, and then to Tondiman's country, in the hope of finding concealment there for a time. He was however seized by the prompt interference of Captain Blackburne, then Resident at Tanjore, and being brought a prisoner to Kytaur, he was there executed under the sentence of a military inquiry, a few weeks after the criminal career above related.

The detachment after the evacuation of Panjahlumcoorchey, made a circuit to the north of the district, through Naglipoora and Colarputty, and then in a few days returned to canton at Kytaur, the 3d regiment N. I. having been sent to the north-west to awe that quarter. On this tour, the Civil and Military authorities declared the confiscation of several Pollams, the possessions of the confederated rebel Leaders; and at Kytaur was more deliberately pursued all those salutary reforms, of which we enjoy the benefit at this day. The misery of Tinnevelly from the cold-blooded oppressions of the Nabob's Government, and still more from the open violence and ceaseless rapine of the Poligars, can be known only by re-

ference to the public records, where they will be found feelingly and forcibly depicted by our present Governor.* The forts, and all the strongholds of the Poligars were ordered to be dismantled. All arms were ordered to be delivered up, excepting such few only as the Collector might sanction for mere personal retinue, and they were one and all warned on the pain of the severest consequences from pursuing that licentious course, and cherishing the pernicious militant notions that had called for all these stern measures of reform.

Major Bannerman left the detachment to embark for Europe early in 1800, under high and well earned encomiums from the Government. The command devolved on Major Robert Turing; who having preferred a high situation on the General Staff, left us about February. He was succeeded by Major Colin Macaulay, who with the command of the district, held also the appointment of Resident at Travancore. The state of affairs soon admitted of the separation of the detachment, and the Governor General requiring his services for a time at the Travancore Durbar, the 3d regiment N. I, was cantoned at Shenkerninaur covil, (now under the command of Major Sheppard) a few companies of another corps were left at Kytaur, and Palamcottah was garrisoned by Lieutenant Knowle's provincial corps and some other details. The main body of the force returned to Trichinopoly and other stations, and at the close of the year, there was to all appearance the most prosperous settlement of all the objects of the Government combined with the most perfect tranquillity in the country.

Two of the brothers of the late Poligar of Panjahlumcoorchey, with some other rebel chiefs had been confined in Palamcottah. One of these brothers was but a feeble person, the other was born dumb and was an object of much superstitious attachment. The last though deprived of the faculty of speech, was yet abundantly active and mischievous. In the

* The Right Honorable S. R. Lushington was Governor of Madras, when this was written.

first week of February 1801, all the prisoners in the fort made their escape. It was very obvious that much secret intercourse must have been kept up between them and the population of the confiscated Pollams, which received the fugitives with open arms, feeling abundantly discontented no doubt, at the peaceful life now required of them. An entrenchment and breast work were run up with incredible celerity round the mound and remnant of the old fort of Panjahlumcoorchey, and all the concealed arms were quickly restored to light, it having been the considerate policy of the time, to invite the surrender of arms by the payment of a liberal price for them, rather than to adopt a more rigorous scrutiny for their seizure.

Major Macaulay moved with all possible dispatch against the fugitives, with the disposable part of the Garrison of Palamcottah, and a few horsemen drawn from the Nabob's establishment to Seevalapary, there to await the junction of Major Sheppard with the 3d regiment N. I. This small force appeared before Panjahlumcoorchey, in less than a week from the escape of the prisoners, and had there to view the formidable body securely entrenched, armed far beyond expectation, and to crown all, displaying an exulting front from the flattering course of their enterprize. It was now a very serious question, whether they should be attacked forthwith, and thus hazard in case of any check much more extensive commotions, or whether it were more advisable that the detachment should withdraw for a time, and await reinforcement from Trichinopoly. Happily the latter alternative, painful as it seemed, was agreed on in perfect concurrence by Majors Macaulay and Sheppard, and the detachment commenced its retreat in the afternoon, surrounded by thousands all the night using incessant attempts to create confusion on some point or other, and then to break in and cut off the detachment. The provincial corps was but newly raised, and the Nabob's few horsemen were not to be considered—all indeed depended on the 3d regiment N. I., whose steady and firm conduct carried the detachment

through the perils of the night. It was at times so closely pressed, that infinite vigilance was called for from every officer present. As the day dawned the assailants fell off, and the detachment reached Palamcottah only to prepare for a renewal of the contest on a more extended scale.

When the expected reinforcements were on the advance from Trichinopoly, Major Macaulay moved the detachment forward to Kytaur, and when all had joined in March, it moved again towards Panjahlumcoorchey, arriving before that place on the last day of that month. In our progress thither, an affair occurred that deserves to be noticed for the credit of all parties. A considerable body of the Poligars stood firmly on the open plain, a charge of our cavalry under Lieutenant James Grant of the Body Guard, and though the Poligars were mostly destroyed, they yet inflicted severe retaliation on our men, and Lieutenant James Grant was dangerously wounded. The battering at that point of the fort that it was proposed to attack, continued from early in the day till the afternoon, but it was soon found that two 9 pounders were of little avail for this purpose against solid earth walls, and it was naturally enough apprehended, that whatever might be the damage of the day, it would be deligently repaired during the night. Under this impression, the storm of the place was ordered before the afternoon was much advanced, and it was persevered in for a very long time. The storming party consisted of two very fine but weak companies of H. M. 74th regiment, followed by the 3d regiment N. I., and some other native details under the immediate direction of Major Sheppard. The animation and gallantry of all, was indeed most conspicuous and beyond all praise. The breach (so considered by the Artillery officer) was in fact no breach at all, and all attempts to carry the place proved utterly unavailing, so daring and determined was the Garrison, and so difficult of access the point of attack. Our loss was severe in the extreme; two Officers of H. M. 74th, one of some other corps, and one of the 3d regiment N. I. of the name, I think of Eagan were killed, with men in proportion.

On the retreat, the Garrison rushed out in considerable numbers—Major Sheppard formed his own corps into line with great celerity, and must have felt the moment a very critical one, as the enemy had seized one of our field pieces.—Captain N. M. Smyth (of what corps I do not now recollect) consulting with Major Sheppard for an instant, called out for volunteers to follow him, and a party of the 3d regiment N. I. with some others immediately charged the enemy and recovered the gun.—The courage and presence of mind displayed in this striking minor affair, served in some degree to turn the current of feeling from the appalling scene around us, and showed indeed that unless behind walls, the enemy had no great confidence in their spears against our Infantry.

This severe failure may be numbered amongst many instances in which, eminent talents and qualities of the noblest stamp, are insufficient to ensure to the possessor of them the success to which he is well entitled. Major Macaulay, it was no doubt thought by many, ought to have scoured the district with one-half of the force under his command.—In truth his means were quite inadequate to his object, the guns were quite useless as battering pieces, and a further delay in the attack was not to be thought of. The government was now awakened to the whole severity of the service, a great native force was ordered from different stations of the Carnatic, an European corps, H. M. 77th, was called round from the Malabar Coast, a corps of cavalry was put in motion, and a powerful train of artillery dispatched from Trichinopoly, the command of the service being transferred to an Officer of higher rank. This was Colonel Peter Agnew, a person of great military experience, and well known as the Adjutant General of the Army for many years.

It was the best part of two months, before this new formation of the force could assemble at the scene of action, and in the interval, little more was in the power of Macaulay, than to restrict as much as practicable the range of the enemy, for which purpose he kept his station on a small ridge, a mile or

two to the westward of the fort. Their night annoyances on our position and skirmishes with our foraging parties in the day were very frequent, and they seemed to have taken up the notion, that the muskets of our sepoys were of little security against their spears during the fall of rain. On one occasion of this kind, they sallied out and attacked in a large body our right piquet, and moved off a field piece, which was recovered only by a sudden clearing up of the weather, discovering the attack to other parties of the force near at hand. The eastern range of country was fully at their mercy and they took possession of Tutacoreen with great exultation. The attachment of some of the western Poligars was somewhat doubtful, but our situation restrained much intercourse on that side; and on the north, they were kept in excellent check by the meritorious conduct and entire devotion to our cause of the Poligar of Yettiapoor, supported by a respectable portion of a fine provincial corps belonging to Ramnad. The command of that station was held by Colonel Manuel Martinz, a gentleman who in his own day filled a large space in the public mind and general respect of this quarter. He was originally in the service of the Nabob.

The expected corps all came up by the middle of May, and Colonel Agnew assumed the command about that time. From his arrival to the 24th there was the greatest activity in making a breach, and it was so thoroughly effected by that day, that to all appearance it admitted of running up with the utmost facility. The enemy however had thrown a very wide abatis of new felled thorn trees all along the approaches on every side, and this occasioned some short interruption.— Arrived at the top of the breach, it was by no means easy to descend. Here the garrison had excavated the bastion or ground all around so deeply, as not to be easily grappled with, and it is said, had carried the excavation so cleverly under the brink of the Breach, as to be able to strike with their spears in comparative safety, those who leant forward to fire on the defenders below. These were a good deal checked, it was

imagined, by hand grenades, but I believe the place was at last carried by entrance at the flanks, which however, had been strongly palisaded, and moist earth was in constant supply to repair the damage to the walls on each side the breach. The storming column consisted of the 77th King's regiment, and the small remnant of the gallant 74th, together with several native flank companies, and to the best of my recollection the whole of the 3rd regiment N. I. The contest was supported by the enemy with all the spirit of former occasions, but all resistance was vain against our present overwhelming force, and vast numbers were destroyed at the breach and in the fort; five of our officers were killed and many men of course. The whole of the surviving Poligar body retired from the fort with the most imposing regularity, unarmed persons and the women repairing to the centre, and the armed men closely ranging on each side. The cavalry however made dreadful havoc on this body, which was soon broken and dispersed. It was alleged that not one chief of any note was lost to the cause in this Panjahlumcoorchey warfare, so careful had this class been of its own safety, and one and all found refuge for a time in Shevagungah; where they soon found new occupation quite congenial to their habits.

The attention of Colonel Agnew was now to be directed to a country of a very different description to that which had just been subdued. The Shevagungah country was remarkable in those days for jungles, or rather dense impervious primeval forests of much magnitude, often stretching a dozen miles across, and in which no progress could be made but by the aid of the Pioneers. The Chief of it was known by the appellations of "The Murdoo," and "The Sherogar," terms indicative of the lowness of his origin. He was at first the servant, then the Predawn or Chief Civil officer, and at last the usurper of the rights of the ancient Rajah of the country, whose family was now nearly extinct. He had been more than once in arms against the Nabob and as often successfully bought his pardon. On the paramount authority over the Pollams being ceded to the

British government in the year 1792, he had been treated with consideration, and I believe had nothing then to apprehend from a retrospect into the origin of his authority. He possessed the reputation of being a man of considerable sagacity, yet, this was much belied by the infatuation that now governed his counsels. It must be mostly attributed to that spirit of turbulence and suspicion that seemed innate in the Poligar character of older days. Besides his traitorous intercourse with the Tinnevelly insurgents, he had actively fomented disturbances in the Ramnad district, and had instigated some leading adherents to beset and threaten the fort of Ramnad, and his proceedings altogether called loudly for the application of that system of reform that had at length humbled the bolder spirits of Tinnevelly to prostration and quiet.

The detachment moved to Tripoovanum near Madura to disencumber itself of its heavy artillery, and these it was found expedient to move forward to Ramnad, to clear that quarter of disturbance and marauders. It was an object also with Colonel Agnew, to ascertain there under more close enquiry, whether the eastern approaches to the Murdoo's Citadel (the Pagoda of Caliarcovil situated in the centre of a very deep forest) were of a more practicable nature than the western approaches, which had so seriously baffled our forces in former invasions of the country. In the year 1789 Colonel Stewart of H. M. Service had been sent against the Murdoo, with a large detachment, to reduce him to some submission to the Nabob's government. I believe that this Colonel Stewart, was our Commander-in-Chief of a much later date of that name. In this service he sustained most opposition in his attack on the western barriers, and at a still earlier date, that is in 1772, it was also on record that Colonel Joseph Smith, the contemporary of Lawrence and of Clive, had encountered much difficulty on that side of Caliarcovil.

On our march from Tripoovanum, and as we approached Tripalchetty, the enemy appeared in great bodies, and one strong party was strongly posted behind a bank flanking our

road to a great extent. The advance consisting of the 6th regiment N. I. charged this party with much effect, and in this affair the commandant of that corps, Major Gray was killed. Other parties of our advance, on taking up the ground for the day, were suddenly assailed from quarters of which they had no clear view, and some of our officers suffered here from dreadful spear wounds. I think it was here that Lieutenant Start of the 3d regiment N. I., was wounded. The next day we were again opposed, and an attempt was made to seize a gun from the rear guard, and Captain Trotter in command of it was slightly wounded.—The detachment pursued its course to Ramnad, where it arrived sometime in June without any more opposition, although there was no doubt that large parties were hovering about in the jungles north of the Vigay river in the vicinity of our route.

At Ramnad, Col. Agnew had the benefit of much communication with Col. Martinz, who had in his earlier day seen much Poligar service. He was now in years.—The eastern approaches to Caliarcovil were described by all that had any familiar knowledge of them as of much greater extent, and of far more difficult access than the western approaches, and superadded to this serious inconvenience, almost all the Ramnad district was at this time in a destitute state, partly from the disturbances that had prevailed in it, and yet more from a famine with which it had been afflicted a year or two before. Here too we had the intelligence, that the Murdoo was placing Caliarcovil in a state that might call for battering guns, and give us a renewal of the arduous scenes of Panjahlumcoorchey. Under these circumstances, the detachment retraced its steps to Madura by the route of Comary, which place, it was considered advisable to put in a good state of defence, to keep in some check the malcontents in that quarter. Events proved the utility of this measure, for while the detachment was busily engaged in Shevagungah, and its communications very much obstructed, this post of Comary entrusted to a rising young Officer of the 3d regiment N. I.,

was hardly pressed, and it would have been considered a great acquisition by the enemy, as it was far stronger in its construction than the general run of native forts. The name of the officer I have alluded to was Greaves. He had much credit given to him for his spirited conduct on this occasion, but he did not live long to enjoy it.

Our commandant having at Madura received his final instructions for the reduction of Shevagungah, and having made all his arrangements for the peculiar warfare now before him, moved in July to the north-east for the purpose of allowing a select corps to join from Dindigul under Colonel James, which had been lately employed in that quarter in putting down the Veerapatchy Poligar and his adherents.—After this junction, the whole moved forward, consisting now of a very efficient force, (of I should think at the least 7000 strong) to the attack of Sherevail, situated to the east of us. This town had become of some note since the rise of the Murdoo's fortunes. He made it his constant residence, and it was conjectured, that he might here make some vigorous stand. The march, not more than 8 or 9 miles, occupied us all the day, though the main road was a very good one; it lay through a strip of country of the general breadth of 1200 or 1500 yards, shut in on each side by high and strong jungle, whilst the intermediate space was every where crossed or flanked by the banks of tanks, close palmira topes, or occasional patches of thin and common jungle, all that the Poligar could covet for his desultory warfare.—The enemy was abundantly armed, and he possessed a great number of the small guns of his own particular description. The firing on his part was incessant all the day through, and a distant hearer might have concluded that we were in desperate conflict, but happily it was all noise and random firing, and did no serious harm; our own field pieces rarely opened but when the Poligars were in great crowds in front and on the flanks. Whenever our parties closed in upon them, they retreated to other points. The country to the left, north of our main body, seemed that in which the enemy harboured with

most confidence. and on this side was stationed Major Sheppard with his corps as a flanking column. Our equipments and baggage were an enormous mass, and would have afforded much temptation to a more enterprizing enemy. At sunset we reached our ground, and found the large town of Sherevail in general conflagration.

Colonel Agnew entertained a sanguine belief that the opening for the force of an entire new road to Caliarcovil, would be a far more eligible operation than assaulting strong and numerous barriers that were known to be constructed with all the care and ingenuity the Poligars show in such defences, and which at that moment would certainly have cost us very dear. The work of opening this road commenced with considerable alacrity, though it indeed proved throughout a most laborious undertaking. The line that was to be opened, was estimated at not less than 5 or 6 miles from the skirts of the jungle opposite the encampment, to the Pagoda of Caliarcovil, and by far the larger part of this was accomplished when sickness spread over our camp and much yet remained to be done The enemy too had now for some time, learnt to carry on under secure cover, a very harrassing resistance to our parties, as they moved up each successive morning, exposed in the open space or avenue they had made for themselves, to pursue the work of approach to Caliarcovil. It turned out a very irksome and dispiriting warfare, as the hand that dealt the blow was rarely seen, and to return it on our part with any effect, was next to impossible. Our supplies too from the extreme closeness of the country, and the crowds of peons about, became very precarious, and at last they could be brought up only by the movement of whole corps at a time for their protection.—Colonel Agnew now seeing the necessity of abandoning this plan of operations, moved early in September to a fine open plain, running at some distance parallel to the Caliarcovil jungle on the west, which proved a most acceptable contrast to the unpleasant spot we had quitted, and here the force soon recovered its wonted health and all its accustomed animation.

This period was also marked by a proceeding that had a most beneficial influence on our affairs. The Collector of the Poligar Peshcush had with great judgment sought out the Heir to the Pollum, and under the authority of the government, this personage now received in camp an investiture of his country with great ceremony and publicity. He is the present Zemindar. He had in his childhood been adopted by the last representative of the proper family of the Pollum, but had been compelled to forego his expectations, to fly for his life and remain in deep obscurity, the Murdoo, in his early days being much too powerful a chief to allow him to entertain any hope of restoration. His adherents now however, pressed his claims with much zeal, and the government with very seasonable justice and consideration determined on their entire recognition of them, and his elevation was hailed by the population in general, with the highest satisfaction. Colonel Agnew about this time made a night movement, with the cavalry and some native details to attack Peramally, which was surprised and taken possession of, without any material occurrence. It was judiciously chosen, and it had been reported that the garrison was collecting stores for some ulterior object, and its situation also allowed of parties from it, much disturbing our communication with Trichinopoly, which led to this visit. The post itself consisted of a handsome Pagoda situated on the brow of a hill, from whence ran a wall enclosing a small village below. The garrison seeing our movements to turn their rear, escaped by close passages in that direction, leading to jungles on the opposite side of the hill. The resistance it offered was very feeble.

All preparation having been completed by the 1st October for a general assault, Colonel James was desired with his separate corps to force a small barrier opposite his position, whilst the more noted barriers that had presented so much opposition in older days, were to be attacked by Colonel Agnew himself with his superior force, and with that moved the

3rd regiment N. I. The person who was confidentially attached to the officer appointed for the service, to assist him in his business with the country, had during this critical period, watchfully fixed his attention on the state of the road that had been opened by the force from Sherevail. All his intelligence went to corroborate the account, that this point was now left entirely ungaurded, the enemy seeming to view it as far too remote from our main body to need any precaution. The distance indeed was something to be considered by ourselves, but it was certain that the enemy would be sharply employed every where, and Colonel Agnew therefore approved of the movement of a small column in that direction. It was arranged, that it should proceed in such deep secrecy over night, that even our own camp should not be apprized of its movement, since we had now many of the inhabitants about us who might play us false, and it was urged as equally desirable, that in its passage forward, it should carefully avoid every hamlet, that no alarm might be given. It met not with the smallest impediment, and from the end of the excellent road that had been abandoned a month before as altogether unavailable, paths were found which had been traversed by the enemy whilst opposing our working parties, quite open to the very walls of Caliarcovil. The surprise and panic by our sudden appearance in this most unlooked for quarter, caused an instantaneous abandonment of the place, and as rapid an escape of every soul to the contiguous jungle; Colonel Agnew was kept at a stand for a short time from the numerous obstacles thrown in the way of his attack, there was of course the usual incessant firing and much general uproar, but the first barrier being penetrated at the flank, the flight of the enemy became general through the numerous narrow paths about, and they had been apprised, it is palpable, of the fall of their strong hold which must have much enfeebled their resistance. Every point of defence from the interior one to Caliarcovil was found deserted, and on discovering the Pagoda, our commandant had the high satisfaction of perceiving our sentinels on the walls. The meeting indeed was alike

happy to every one, since here was an end to this irksome service..

Colonel Agnew now moved to the north of the Shevagungah district, and Major Sheppard was sent with his corps to overlook the southern part until matters became perfectly quiet. Most of the corps forming the Force soon moved away to other stations, and those that remained were chiefly engaged on the apprehension of the principal offenders. The Murdoo was soon seized, and he suffered his fate on the highest bastion of Tripatore. This place was then a neat compact strong post, which had been usually garrisoned by the troops of the Nabob, until the Pollums passed to the Company. At the rise of these commotions, it was occupied by a party from Colonel Martinz's Ramnad corps, from which it was seized in great triumph by the Murdoo. The two Panjaulumcoorchey rebel Chiefs now also atoned for their crimes in front of their own works, which had proved the grave of no less than 14 of our officers, and so many other gallant men.

In November, Colonel Agnew leaving a corps in Shevagungah returned to Tinnevelly, bringing with him the 3d Regiment N. I., which in March or February 1802 was stationed at Palamcottah, the 6th Regiment which was sent to Sunkerninarcovil, and a corps of Cavalry which was placed at Tachinelloor. During his absence north, other desperate though minor characters of Tinnevelly, had been put down by the activity of the Collector Mr. Lushington, and the Commandant Major Macaulay, and many of them were now banished to Prince of Wales' Island. The Carnatic had by this time passed to the Company's authority, and Tinnevelly now enjoyed a state of quiet and protection, which I am sure was utterly unknown to it in any former day of its history.—Colonel Agnew had soon the satisfaction of reporting to the Government, the happy accomplishment of the service for which he had been specially selected, and he then returned to

the Presidency, and Major Sheppard his most valued and ever zealous auxiliary, soon I believe embarked for Europe.

I may now advert to those occasions in which the 3d Regiment N. I. was employed separate from the main Force. In October 1799, it was dispatched to the western Pollums, to superintend the demolition of Forts and the surrender of Arms. In that direction, the son of the Poligar of Shevaghery had been rather prominent in mischief, but the conduct of the Father had been creditable, and in consideration of this, the offences of the former were overlooked, but Shevagherry had in old days been formidable, and it was therefore expedient to watch it. After the prudent retreat from Panjaulumcoorchey early in February 1801, a Company of the Provincial corps, and a small party of the 3d. were put into the Pagoda at Streevycoontum, to protect the five villages on that side, but whilst Major Macaulay was at Kytaur, this post was either so closely pressed or became so much alarmed, that it was considered advisable to send a corps to its relief. The crowd that assailed it having been dispersed, Major Sheppard withdrew the party and returned to Kytaur. After the fall of Panjaulumcoorchey in May 1801, the corps was immediately pushed forward to Naglipoor and Caudulgoodey, the Pollum of two of the rebel confederates, whose adherents retired to Comary, where they made a momentary stand, wounding some of our men, but soon took to flight when closely charged. The corps rejoined Head Quarters a march or two before we reached Trepavanum. At Ramnad, it was detached southerly to bring up supplies and to overawe the country, and it again rejoined a few days before the Force arrived at Madura sometime in July. During the operations at Sherevail, it was specially employed to reconnoitre some old passages to Caliarcovil, situated a little to the eastward of the encampment, of which reports had been received that raised a hope they might be accessible, but Major Sheppard ascertained that this notion was without foundation, a short time before the Force changed its position altogether from Sherevail, the corps was detached

to convey supplies from Tondiman's country, in which description of service there was always as much jungle fighting as with the main body.—Its employment in the south of Shevagungah after the capture of the Caliarcovil, has been already mentioned.

How many honored names have been presented to my mind as I have proceeded in this brief narrative—Trotter, Joyce, Knowles, Little, Pepper, Stuart, all now no more; and Colonels Vesey and Welsh only, I believe, amongst the living. It deserves to be remembered that of the many corps which participated in this service, the 3d Regiment N. I. *alone* saw it through from its commencement to its conclusion. It may also be allowed to one who was attached officially to that service throughout, to express his lively recollection of the high confidence and activity it inspired wherever it was employed. It remained but a short time in Tinnevelly, being soon called upon to take a part and sustain its well earned reputation, in the more renowned transaction of the Maratta war of 1803. Yet, it may not be irrelevant to notice that early in 1799, and under the command of Captain Davidson, it formed one of the corps of Colonel Browne's Detachment, employed in reducing Coimbatore, and in collecting supplies for the Grand Army before Seringapatam. In the preceding year, it would seem that some portion of it must have been employed under Major Bannerman in quelling disturbances in Ramnad. Major Bannerman proceeded for that purpose from Palamcottah, and he was certainly accompanied by some party under Captain Tichbourne, who at that time, I believe, belonged to the 3d Regiment N. I.

IV.—*On the Inscription near the Varaha Swami Temple, at Mamallaipuram or the Seven Pagodas, with a transcript and translation.*

The above-mentioned inscription is cut in a niche, on the face of the rock against which the modern pagoda is built. The eastern side of the building abuts on the niche, about one-fourth of which is in consequence covered by the wall, and a considerable portion of the writing is thereby hidden from view. The circumstances under which the transcript was made, will be found in the Proceedings of the Committee of the Literary Society of the 6th July, 1844, at the end of this No. Three copies of the inscription were made by three different parties, which were collated by *Tándararáya Mudaliar*, the learned Principal Sudder Ameen of *Chingleput*, who also supplied a *Telugu* paraphrase of the whole, by the aid of which the present translation has been prepared.

Swasti Sri!

In the 9th *andu* of *Koppara-kesari-varmà* [also called] *Udaiyar Sri Rájendra Devar*, who having taken the whole *Irattaippádi* seven lacks and half, having intimidated *Ahawa-Malla* in battle amid the pitfal [*cuppam*] of his army, seized upon his elephants and horses, and performed lustrations of victory, when he deigned to sit upon his throne;—the citizens of *Jananáthaptura* which is *Mámallapura* the chief city of *Amúrnad* in *Amúrkóta* in the prosperous *Chólamandalam, (Sózjamandalam)* and we the inhabitants of *Périlam*, do record that the eastern boundary of the land which we have granted for *Alwar (Azjvar)** in the temple of *Paraméswara Mahávaráha Vishnu* in our village, inclusive of the land formerly held free of tax, as *dévadánam*, lies west of *Sickuttichéri*—its southern boundary is the

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* This *Alwar* is still worshipped by the *Vaishnava* Sect under the name of *Bhuta*, in the following invocation :

తులాశ్రవిష్ఠాసంభూతం
భూతంకల్లోలమాలినః
తీరేఫుల్లోత్పలామల్లా
పుర్యామీడేగదాంశకం।

"I adore *Bhuta* who from a portion of *Vishnu's* Club, was born in a blue lotus at *Mallapur* on the sea-shore, under the sign of the Balance in the constellation of the Dolphin."

north side of *Vayaluzján kannár-nilam*, belonging to *Maháviskhnu* in this village,—its western boundary is the vast (shore of the) backwater [or creek]—and its northern boundary [reaches to the] south side of the temple of *Mámallai Perumál* and to the fresh water well on the south-east of the *Kónéri*—we have granted to the *Devar* as *dêvadánam*, free of tax, all the lands within these four limits, over which the guana has run and the tortoise has crawled, inclusive of *nir nilams* and *punjey nilams*, setting apart four *tadis* of land with trees and arable fields within this tract, for the expenses of meat-offerings [*bali*] to the deity, and determining that from the produce of the remaining *nir nilams*, one *padacku** and four *nazjis*† paddy, which at the rate of two-fifths are [or yield] one *kurani*‡ of rice shall be set apart for the offerings of food to the *Devar* for the two *sandhis* or stated periods of worship at four *nazjis* of rice for a *sandhi*—and also one *kurani* of paddy for two *sandhis* at four *nazjis* for a *sandhi*—for two sorts of *karis* [or meats] for each *sandhi*, two and half *sevida*§ of ghee, one *uri* || of curds, *adaickáya* consisting of two areca nuts and eight betle leaves for a *sandhi*, in all three *kuranis* and four *nazjis* of paddy for two *sandhis* should be paid, and that the people who cultivate the lands, and the people in the *Madavilágam*¶ of this *Devar* shall not be subjected to the payment of any tax—I wrote at the desire of the citizens of *Mámallapura* or *Jananáthapura* and the people of *Pêrilam*—signed: *Tiruvézjichiludáiyar Tondan Adavalán—Karnattán* of this village; this is my writing.

This is *Olinágan Mádaiyán azjagiya Chola* the *Amur-nattu Muvendavelan's* writing.

This is *Olinágan Chendrásekara's* signature.

This is *Olinágan Náráyana's* signature.

This is *Kalattuzjan Sùtti Araisan's* signature.

This is *Kolandai Sirálan Setty's* signature.

This is *Indipuravan Sanganagan's* signature.

This is *Máppùdi Náráyanan Mádackali's* signature.

This is *Máppùdi Ammódi Aráva Murti's* signature.

This is *Uchangkizjavan Mugalinágan's* signature.

This is *Vandázjanséri Udaiyan Arayan Pichan's* signature.

The person who molests this charity will incur the sins of having committed capital crimes on the banks of the *Ganges* and at *Kumari*.

Swasti Sri!

In the 9th *andu* of *Kóppara-késari-varmar* (or) *Udaiyar Sri Rajendra Dévar* when, having taken *Irattaippadi* of the whole seven lacks and half having intimidated *Ahawa Malla* midst the pitfal of his troops, having

*Two marcals. † A padi or measure the eighth part of a marcal. ‡ A marcal.
§ A sevida is the 120th part of a padi or measure. || Half padi or measure.
¶ The establishment or inmates of the temple.

seized upon his elephants and horses, and having performed lustrations of victory,—he deigned to sit on his mighty throne; we the inhabitants of *Tiruvezjichi*, the *Dévadánam* and *Brahmadéyam*, (village) in *Ámurnàd* of *Amurkotta* in the prosperous *Cholamandalam*, do write—that the eastern boundary of the lands which we are to grant as *dévadánam* free of rent, for the *Alwar* in the temple of *Sri Parameswara Maháváráha Vishnu*, in *Mámallapuram* or *Jananáthapura* the chief city of this *Nad* lies west of *Kommadikundil* in the road to the tank *Vannackaneri*—the southern boundary (of it) is the north of *Pallacheruvu* or the land called *Kalattuzján paraman mugali*—the western boundary (of it) is east of the field (called) *Sàttuzjàn Chendra Sekara kirama vittan*—and the northern boundary (of it) south to the field (called) *Kazjiyan semme mettan kunavan*. We have granted for this *Dévar*, the three hundred *kuzjis* of the land (named) *Eramennu* within this boundary as *dévadánam* free of rent, together with the water to irrigate this land from the tank *Vannackanéri* and also the water channel.—We are to free the cultivators of this land from the payment of the principal (*peruvari* or ayeen) and sundry (*sìlavari* or additional) taxes—and also from forced labour, *(vetti)* and the carrying of burdens and pounding of grain for the food of persons of all descriptions. Thus having agreed, we have granted (this) as *dévadánam* free of rent.

I, *Bharadwaji Adavalàn*, a Siva Bramin of *Karpackam* in this *Nad*, wrote this at the request of the inhabitants of *Tiruvezjichi*. This is my writing.

This is the writing of *Pádáyackiram vittan*.

This is the writing of *Dévaganáta pattan* of this *kshétram*.

This : *Satandei mallen senagan*.

* * * * (effaced.)

* * * * *Oli nágan Náráyanan*.

This is my writing, * * * *

This * * * * of this *kshétram*.

* * * * * *Pattan*.

I know, this is the writing of *Arumbakizján kazji iráman*, *Muvendavelán* of *Amur nád* in the prosperous *Cholamandalam*.

This is the writing of *Tonda Adavalàn* the *Kanattan* of this village.

In this *ándu*, *Olinágan Madáiyan*, *Muvendavelan* of *Amur nad*, granted 90 goats, for a lamp to be kept always burning.

Kámakòdan selavan, &c.

The remainder is defaced.

Two grants to the same temple are here recorded, both made in the same year but by different parties. The opening sen-

tence of both is word for word the same, and constitutes the most important portion of the deeds; possessing a double value both as affording the means of ascertaining the exact date of the Tamil inscriptions at *Mamallaipuram,* and as a historical record confirming in a remarkable manner, a fact of some importance ascertained from totally distinct sources. In a paper on the *Chalukya* Princes of *Kalyan* in the *Dekhan* published in the IVth Vol. of the Journal of the Royal Asiatic Society, and republished in Vol. VII. p. 193 of this Journal, it is stated on the authority of an inscription at *Anigerry* in the *Dharwar* district, that *Someswara Deva Chalukya I.* surnamed *Ahawa Malla* had been invaded by "the *Chola Raja* who had ravaged the *southern* provinces of *Kuntala desa,* and destroyed the city of *Pulikara nagara,* the modern *Lakshmeswar* near *Savanore.*" The *Chalukya* inscription asserts that *Ahawa Malla* defeated and slew the invader, and there is no doubt the invasion was ultimately repelled. But enough is admitted to show, that it had been in the first instance eminently successful. The present inscription evidently refers to the same fact, and there is no doubt that *Vir Rajendra Chola* surnamed *Koppara-kesari Varma* is the *Chola* Raja above referred to. This is further confirmed by other inscriptions of this same prince, on the magnificent temple at *Gangondaram,* on the north bank of the *Cavery,* of which he appears to have been the founder. One of these, in the 5th year of his reign, runs thus "*Ko-Viraja-Kesari Varma* named *Rajendra Deva,* wielding the sceptre with valor for a companion and munificence for an ornament, freeing himself from the blackest sins, having intimidated *Ahawa Malla* of *Kudala Sangama,* having vanquished the *Vickilan* and *Singalan,** and taken their queens with their effects and carriages, and having a second time terrified *Ahawa Malla* in battle; having also recovered *Venginadu* and fulfilled the vows of his elder brothers, &c." In a subsequent grant in the same temple he

*The Singalan must refer to the King of Ceylon.

is described as "having perpetuated his fame in the *northern* country which he conquered, &c."

The kingdom of *Kalyan* had not long before been rescued from foreign enemies by the great grandfather of *Someswara Deva* I. and may not have been yet fully re-established, thereby inviting the attacks of its southern neighbours, who were then in the height of their power. The inscriptions of the father of *Someswara Deva* I. named *Jayasinha,* show that he also was at war with the *Cholas,* but their differences must have ceased with the contest recorded in the present inscription, for the youngest son of *Someswar Deva,*— *Vicramaditya* II. was the most powerful sovereign, not only of his race but of his time, and ruled over an enlarged and extensive kingdom for 52 years, in the numerous extant inscriptions of which, no mention occurs of a *Chola* war. On the other hand, the *Cholas* had attained their greatest prosperity at the period of the inscription, in the time of *Vir Rajendra Chola,* whose father *Raja Raja Narendra,* acquired possession of the whole of *Telingana,* by intermarriage with the eastern branch of the *Chalukya* family, sovereigns of *Vegidesam,* and left to his son a kingdom, extending along the coast from the mouth of the *Godavery* to *Rameswaram,* and inland probably over the greatest part of the southern provinces of this Presidency.

The next point is to identify the era of *Vir Rajendra Chola* with that of *Someswara Deva* I, surnamed *Ahawa Malla.* The latter has been ascertained with tolerable precision in the paper above referred to, and is shown from a comparison of several inscriptions, to be from about S. S. 962 to 991.* By a valuable inscription recently procured, I find that *Rajendra Chola* succeeded his father *Raja Raja Chola* in S. S. 986, and the same authority shows that he still continued reigning in S. S. 1001. It is clear therefore that he was not killed in the action with *Someswar Deva.* But besides that the metaphori-

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* Journal Vol. VII. p. 196.

cal language of the inscription does not imperatively require such a rendering, it is very possible that *Rajendra Cholà* may not have commanded in person, but may have intrusted the expedition to one of his generals who, as shewn by numerous inscriptions of that age, were in the habit of assuming the family name of the sovereigns under whom they served. The date of the inscription, the 9th of his reign, would therefore be S. S. 995 or A. D. 1073. The battle of *Lakshmeswar* must have occurred very shortly after his accession, for the *Gangondaram* inscription already quoted is dated in the 5th of his reign. The synchronism therefore of the three records is perfect.

The last object of inquiry is the identity of the places referred to as the scene of the war. The term *Irattaippádi* used in both the *Chola* grants, does not occur in any of the *Dekhan* inscriptions that I recollect. It may however have been the familiar term for *Kuntala desa* in the south. Instances of such diversity of nomenclature are not uncommon. In the *Dekhan,* at this day the *Tamil* country and people are invariably called *Konga-des* and *Kongas.* At *Malacca* and by the *Malays* generally, the people of southern India pass under the name of *Klings,* from the ancient *Kalinga.* Now we know that a powerful race, the *Ratta Kula,* originally overcome by the *Chalukyas* and held in subjection for several centuries, again obtained the ascendancy about the 9th century, and were finally subdued by *Teilapa Deva Chalukya* the great-grandfather of *Ahawa Malla* in S. S. 895 or A. D. 973. Among the titles of *Ahawa Malla* himself, we find an indication of the more recent independence of the *Rattas.* In an inscription at *Nilgund* in the *Dambal* Talook of the *Dharwar* district, he is described as "possessing the lofty golden parasol and the whole territory that had belonged to the *Rattakula* chief, *Sri Vira Martanda.*" A distinguished family of this *Rattacula,* likewise flourished at *Parsghur* and *Samdatty* in the *Dharwar* district under the *Chalukya* dynasty, and

a considerable town yet exists under the name of *Rattehalli* on the *Wardah,* about 30 or 40 miles south of *Lakshmewar.*

In the *Gangondaram* inscription, the *Chalukya* prince is designated as *Ahawa Malla* of the *Kudal Sangama.* This is the name of the junction of the *Tunga* with the *Bhadra* river near *Huli Honore,* where is situated the *Matham* of a celebrated Guru of the *Smartah* sect, usually called the *Kudalgi Swami.**

There is good reason to believe, therefore, that "*Irattaippadi*" was the name applied by the *Tamuilians* to the southern province, at least of the *Chalukya* empire, and even to suppose that it was used to signify the whole kingdom. This opinion is strengthened by the use of the expression "*the whole* 7½ *lakhs.*" In the same inscription that gives the history of the union of the *eastern Chalukya* and *Chola* families, it is stated that the first founder of the former race, descended from the rulers of *Ayodya,* "having conquered *Kadamba Ganga* and other earthly rulers, reigned over the *southern* country of 7½ lakhs from *Narmada* to *Setu*" and elsewhere, similar references are made to the 7½ lakhs dominion of the *Kalyan* kingdom. This evidently refers to the kingdom of *Kuntala desa* only, of which *Kalyan* was the capital; for that of *Kalinga* or *Vegidesam*† was the subsequent acquisition of a collateral branch. What the number 7½ lakhs refers to is not clear. In all the inscriptions of that era, territorial divisions are designated by a number unaccompanied by any explanation of the objects to which it refers. Thus the *Kadamba* family which became a feudatory to the *Kalyan Chalukyas,* are always described as lords of the *Banawassi* 12,000. It may refer to the number of villages or townships, to their revenue, or to the quota of troops the chief was bound to bring into the field.

The inferences bearing on the local history of the Seven Pagodas to be drawn from the preceding inscription are

*There are two *Mathams* of the *Shenkar Bharti* or *Smartah* sect in this neighbourhood —*Sringeri* and *Kudalgi,* besides another at *Sankeswar,* near *Kolapoor.*

† For a notice of *Vegidesam* or *Vengidesam,* see Journal Vol. II, p. 304.

the following. The era of the oldest Tamil inscription is clearly fixed at the latter part of the 11th century, and that previously assigned to the rock *sasanam* of *Salvan Cupam* is confirmed. For *Vira Chola Deva* surnamed *Tribhuvana Malla* is shown by the same inscription as that which gives the date of *Vir Rajendra Chola*, to have been the second son of that prince, and to have been nominated by him viceroy of *Telingana* in S. S. 1001, [A. D. 1079] which would place the execution of the rock inscription stated to have been cut in his 36th year, in the beginning of the 12th century or S. S. 1037, corresponding with A. D. 1115. Further, it is evident from the facts of the grant to *Alwar*, in the temple of *Parameswara Maha-varaha Vishnu*, and the subsequent mention of the temple of *Mamallai Perumal*, that the more modern creed of the *Vaishnava* sect had been established, and that of the *Saiva* subverted. Lastly, the place appears to have borne the name of *Jananátha puram* in addition to that of *Mámallaipuram*, which it is remarkable is invariably here written *Mámallapuram.* [மாமல்லபுரம்.]

In the Appendix to Mr. Ellis' treatise on *Merassi rights*, a copy and translation of the *Salvan Cupam* inscription will be found, which, had it been known at the time, would have rendered the publication of that given in a former part of this volume (p. 47,) unnecessary. The two documents agree pretty nearly, but Mr. Ellis seems to have had a less accurate transcript, than the one prepared for me, which was obtained from two copies made by different individuals acquainted with the ancient character, and these were carefully collated by *Tandavaraya Mudaliar*. Mr. Ellis has also inserted at the same place a version of the few initial half-lines of the *Varáha Swami* inscription, but these were evidently too imperfect to give the true sense. He however agrees in referring the local chiefs antecedent to the *Cholas* to the *Curumbar* race, though he errs in supposing [*Ahawa*] *Malla* to have been one of them.

The Seven Pagodas have received a greater degree of attention from their vicinity to Madras, than they otherwise would have obtained.* The repeated notice that has in consequence been bestowed on them, has thus brought together almost every thing of interest connected with them, and the curious visitor is thus furnished with data, from which to form his own opinion of their age, origin, and object.

*Heyne's Tracts XXI. p. 333.

மூதற்சாஸநம்.

ஸ்வஸ்திஸ்ரீ இரடடைபபாடி யெழரை யிலககமுங
கொணடு பொரிறறஙகணககொபபததாஹவமலலனைய
ஞசுவிததவஞனையுஙகுதிரையுஙகைககொணடுவிஜயாஹி
ஷெகஞசெயது வீரஸிஂஹாஸநததுவீறறிருநதருளிய
கொபபர கெஸரிவர்மரான உடையார ஸ்ரீராஜெந்த்ரதெ
வாககுயாணடு ஒனபதாவது ஜயஙகொணடசோழமண
டலதது ஆமூரககொடடதது ஆமூரநாடடுநகரமாமலல
புரமான ஜந்நாதபுரதது நகரததோமும-பேரிளமை
யோமுமஎழுததுஎஙகளூரா ஸ்ரீவரமெஶ்வரமஹாவராஹ
விஷணுகருஹததாழவாரககுத தேவதாந இறையிலியாக
முனபுடையநிலமுடபடககொடுததநிலததுககுககீழபா
றகெலலை சிககுடடிசசெரிககுமெறகும தெனபாறகெல
லை ஊரகமுடையமஹாவிஷணுககள நிலமானவயலுழான்
கணணாறறுககுவடககுமமெலபாறகெலலை கழிககுககிழ
ககும வடபாறகெலலை மாமலலைபபெருமான் கோயிலு
ககுங கோனேரிதெனகீழைததணணீரககிணறறுககும
தெறகுமஆகஇநநாறபெரெலலைககும நடுவுபபடட நீரநி
லமுமபுனசெயநிலமும உளளிடடு உடுமபோடி ஆமை
தவழநதெவலைகபபடட நிலமுமஇறையிழிசசி இநநிலமி
நதெவாககு தேவதாந இறையிலியாகவும இநநிலததுள

மாமபுல முளளிடட கணணூறு தடிநாலும ஸ்ரீபலிபடடி
யாகவுமநீககிநினற நீரநிலத துபபொகஙகொணடு இததெ
வாககுஸநதியொனறுககுததிருவமுது அரிசிநானாழியாக
ஸநதியிரணடுககரிசி குறுணிககு ஐஞசாணடாக நெலலு
பதககுநானாழியுமஸநதியொனறுககுககறியமுதிரணடும
நெயயமுது இருசெவிடடையுமதயிரமுதுஉரியும அடை
ககாயமுது-வெறறுங காயிரணடும இலையமுதுஎடடுககும
நெலலுநானாழியாக ஸநதியிரணடுககுநெலலு குறுணியு
ம ஆகஸநதியிரணடுககுநெலலுமுககுறுணிநானாழியாக-
நிமநதஞ செலவதாகவும இநநிலமுழுங குடிகளையும இத
தேவர்மடவிளாகத திருபபாரையும எபபொபபடட இ
றையுமகாடடபபெறுதொமாகவும இபபரிசு இசைநது
தெவதாந இறையிலியாககொடுததொம. மாமலலபுர
மான ஜநநாதபுரதது நகரததொமும பெரிளமையோ
மும இவாகளசொலல எழுதினென. இவவூர்கர்ணததான
திருவெழிசசிலுடையான தொணடன ஆடவலானென
இவையெனனெழுதது. இவைஒளிநாகனமாதையான அ
ழகியசொழ ஆமூரநாடடு மூவெநத வெளானெழுதது.
இவைஒளிநாகன-சநதிரசெகரனெழுதது. இவைஒளிநா
கன நாராயணனெழுதது. இவைகளததுழான கூறறி அ
ரைசனெழுதது. இவைகொனநதைசீராளனசெடடியெ
ழுதது. இவையிணடிபுரவனசஙகநாகனெழுதது. இவை
மாபபூதி நாராயணன மாதககலியெழுதது. இவை மாப
பூதிஅமமொடி ஆராவமுர்தினெழுதது. இவைஉசசாஙகி
ழவன முகலிநாகனெழுதது. இவை வணடாழஞ சேரி
யுடையான் ஆயனபிசசனெழுதது. ஐயூ[illegible] ததுககு
அழிவுசெயவான கஙகையிடைக குமரியிடைசசெயதார்
செயதபாவஙகொளவான.

இரண்டாவதுசாஸநம்.

ஸ்வஸ்திஸ்ரீ இரடடைபபாடியெழரையிலககமுஙகொ
ணடுபொரிறறங கணககொபபாததாஹவமலலனை யஞ
சுவிததவஞனையுங குதிரையுங கைககொணடு விஜயாஹி
ஷேகஞசெயது வீரஸிம்ஹாஸநதது வீறறிருநதருளி
யகொபபரகேஸரிவர்மரான உடையாஸ்ரீராஜெந்ரதெ
வாககுயாணடு ஒனபதாவது ஜயஙகொணட சொழமண
டலதது ஆமூரககொடடதது ஆமூரநாடடு தெவதாநம
ஞுஊரு தெயமதிருவெழிசசிலொம எழுதது இநநாடடுந
கரமாமலலபுரமான ஜநநாதபுரதது ஸ்ரீவாமெஸ்வா ம
ஹாவாராஹவிஷ்ணு குஹததாழவாரககுதெவதாநஇறை
யிலியாக எஙகளூரில நாஙகள கொடுககிறநிலததுககுகீழ
பாறகெலலை வணணககனெரிவழிகொமமடிககுணடிலுக
குமெறகும தெனபாறகெலலை களததுழான பரமனமு
கலிநிலமானபளளசசெறுவுககுவடககுமமெலபாறகெல
லைசாததுழான் சநதிரசெகரககிரமவிததனநிலததுககுககி
ழககுமவடபாறகெலலைகழியனசெமமெமெடடனகுண
வனநிலததுககுததெறகும இநநாறபெரொலலை உளளும
நடுவுட்படட எறமென ஞுசெறுவுகுழிமிகுதிககுறைவு
உளளடஙகமுனனூறுகுழியுமஇறையிழிசசி இநநிலமும
இநநிலததுககு வணணககனெரிவழிநீருமநிரொடுகாலு
முளபட இததேவாககுதெவதாந இறையிலியாககொடு
ததொம இனனிலமுழுஙகுடிகளை இனனிலததால வநத
பெருவரியுமசிலவரியுமவெடடிமூடடையாளுமஎசசொ
றறுக கூறறுநெலலும உளளிடடுககடிதொனறும காட
டககடவொமலலாதொமாகவும. இபபரிசுஇசைநதுதெ
வதாநஇறைஇழிசசிககொடுததொம. திருவெழிசசிலொ

Cromlech and Rings at PULLICONDAH.

மவாகளவேணடஎழுதினென் இநநாடடுககறபாககதது
பிவஸ்ரீஹுணன ஹாஹூஜி ஆடவலானென இவைஎன்
னெழுதது. இவைபாதாயககிரமவிததனெழுதது. இபப
டிககுசெததிாததுதேவகஞுதபடடனெழுதது. இபபடி
ககுசசாததநதைமலலனசனகெனன

இவனகைமாடடாஙகி

மறிவேன ஒளிநாகன நாாாயணனென இவை எனனெ
ழுதது இபபடிககு செநதிாதது

படடனென இபபடிககு அருமபாககிழா
ணகாழி இராமநான் ஜயஙகொணட சொழஆமூாநாடடு
மூழிவநதவெளானெழுதது. அறிவேன இவவூா கர்ணத
தான தொணடஆடவலானெழுதது. இவவாணடெ இத
தெவாககுஇவவூா ஒளிநாகன மாதையான ஆமூாநாடடு
மூவெநதவெளாணவைதத திருநுநதாவிளககு ஒனறுககு
வைததஆடுதொணணூறு. இததெவாககுஇடையா
திருவிளககுஒனறுககுவிடடஆடு காமக
கொடடனசெலவனைகயுறற நாறபததைநது.

V.—*Some observations on a remarkable Cromlech near Pullicondah in the Carnatic. By Captain H. Congreve.*

An observant traveller, passing along the new road that connects Madras with Bangalore, cannot fail to have his attention arrested, by this singular vestige of the superstitions that belonged to an age bordering on the verge of the historic era.

Seated close to the side of the road, on a mound, a quarter of a mile from the bungalow, in a south-easterly direction

from it, stands the Cromlech consisting of a huge slab, supported by other flat stones of large dimensions, set on end on the ground rock; and having two rings of stones one environing the other, surrounding the base of the mound it stands upon. Five or six persons might sit with ease in the interior of the Cromlech. The only legend attached to it in the village is, to the effect of its having been constructed by *demons;* the natives considering that, no human beings were able to place these large monoliths in the position they tenant.

Cromlechs or Arthur's Quoits *(Coetne Arthor)* are common in England, Wales and Scotland, the most celebrated ones I recollect, being Kits-Coty house near Aylesford in Kent, which is surrounded by a ring of loose stone; that at Drew Staunton on Dartmoor; and one in Anglesey thus spoken of.

"Here were also the relics of a circle of stones, with the Cromlech in the midst; but all extremely imperfect. Two of the stones are very large; one which serves at present as part of the end of a house, is 12 feet 7 inches high, and 8 feet broad; and another 11 feet high, and 23 feet in girth. Some lesser stones still remain. This circle when complete, was one of the temples of the Druids in which their religious rites were performed."

In Brittany, the ancient *Armorica,* these edifices are called *Grotte aux Feés, Roche aux Feés,* names indicating the superstition connected with them by the vulgar; and which is similar to that entertained by the natives at Pullicondah. But by our antiquaries, the Cromlechs are regarded as ancient altars, erected by the Druids, who made sacrifices upon them, kept sacred fires burning; or whereon they were accustomed to stand when delivering an address to the people. To whichever use they were applied, it is certain, the Cromlechs with their double rings of stones, are of Celtic Scythian origin, since they are found wherever that ancient people or

their descendants settled. Mr. Pennant has inferred, that a similarity of religion originally existed in such parts where the Cromlech and kindred relics are found. The double rings of stones are thus spoken of by Sinclair.

"As far as can be gathered from the vestiges of such of "these sacred enclosures as remain least defaced, they seem "in their perfect state to have generally consisted of the cir- "cular row, or double row of stones in the central open space, "(the proper lucas or place of light) and beyond these, of a "wood surrounded by a ditch and a mound. A holy foun- "tain or rivulet appears also to have usually watered the "grove. Near to the temple frequently rose a sacred mount, "from which it is conjectured the priests were wont to ad- "dress the people." These double rings magnified into structures like Stonehenge, I conjecture to be the prototype of our church architecture.

But in what manner are we to account for the presence of a Temple belonging to the religion of the Druids, on the plains of India, the edifice having no affinity whatever with Hindooism or Islamism. Only, I imagine, by adopting Mr. Pennant's reasoning, and conceiving it to have belonged to a Celtic Scythian race, who inhabited this peninsula prior to the advent of the Hindoos; and at a time when Scythicism was diffused by the Celtic Scythians, throughout the greater part of the vast space included between the western shores of Ireland, and the east coast of China. The Celtic Scythians, were the descendants of Japhet, the name of whose son Gomer, was perpetuated in the Gomerians, Cimmerians, Cimbri or Celts; these passed westward, while another branch of the same people, and the children of Magog populated Asia alone with the descendants of Shem. Druidism or Scythicism, is a corruption of the earliest chosen ceremony, viz. the form adopted by Abel in sacrificing animals by fire on an Altar, with

no other canopy than the skies; whence we trace its existence, debased and perverted amongst the descendants of the sons of Noah.

It is worthy of remark, that one of the gods of the ancient Gauls was called *Belisama*, a name reminding us of the *Belu* of the Assyrians.

Numerous Druidical monuments (elsewhere described) have been found by me on the Neilgherries; and I think I have adduced sufficient evidence to the fact of Scythicism being the religion of the Thautawars, the inhabitants of those Hills. The Thautawars may have been the aborigines of the plains of India, driven before the Hindoos to the mountain, at their invasion of the Peninsula. The cave temples of India, I conjecture, were originally temples of Druidism or Scythicism, subsequently made to subserve the purposes of Hindooism, by the priests of that order who ornamented them with effigies of their gods.

The discovery of the Cromlech at Pullicondah, and of other Druidical monuments in our presidency, affords a new scope for the research of our antiquaries, possibly more interesting than that, which has usually occupied attention.

I venture to offer a surmise respecting the method whereby the huge stones of the Cromlech, were raised into their present position.

A mound of earth was probably first heaped together, the slab of the *ara* then pulled on rollers up its slope, the upright supporting stones were subsequently placed round the mound, their flat sides leaning against it. The earth was then scraped away from the top of the mound until the slab descending rested on the tops of the supporters, thus "locking" them in their places. This being achieved, the mound was wholly removed, leaving the Cromlech standing without any extraneous support.

There is a double ring of stones surrounding a mound near St. Thomas' Mount, but the Cromlech has disappeared.

Note.—[Similar edifices are not uncommon. We have observed two precisely resembling the above at a small village close to Ootramaloor in the Chingleput district, and others somewhat similar may be seen at the village of Segoor, near the foot of the Pass of that name leading to the Neilgherry Hills.]

VI.—*Papers connected with the Construction of a Pier at Madras.*

[The situation of Madras on a low sandy shore against which a heavy surf continually breaks from an open and unsheltered roadstead, is singularly unfitted for commercial purposes. The intercourse between the shore and the shipping always difficult, is oftentimes dangerous, and occasionally interrupted for days together. Many projects have at different times been proposed to neutralize or diminish these difficulties, but none of them have as yet been prosecuted to a successful issue. The earliest scheme on record, was that of Major Lennon, of the Madras Engineers, in 1803, for the construction of a Pier on wooden piles supporting a double rail-way, and for deepening the mouth of the Cooum River. This was followed by Captain Cotton's plan of a Breakwater in 1835, which was abandoned after having been partially carried into effect. Besides which the matter has been discussed from time to time on the proposition of occasional schemes, which have perished before they reached maturity. About the middle of 1843, the subject was revived by the exhibition of the model of an iron Pier at the Master Attendant's Office, the invention of Monr. Duval Piron, Chief Engineer of Pondicherry. Monr. Piron soon after visited the Presidency himself, and public interest was sufficiently awakened to induce the appointment of a Committee for the reception and examination of plans, at a public meeting held on the 1st November.

The Report of this body dated 16th December, 1844, was read at a subsequent public meeting assembled on the 21st December, having been previously published in the Madras *Spectator* of the 18th, (No. 101, vol. viii. p. 807,) but without the Appendix containing several valuable papers referred to in the body of the Report. The following article is composed of a selection from these. The first (Appendix U) is Major Lennon's statement of his scheme above referred to, addressed to Lord Clive. It was referred by the Government of the day for the consideration and opinion of the Military Board, and the Board of Trade. The former body in returning the plans pronounced them "impracticable," adding "that if practicable they would be destructive of the best defences of Fort St. George, by removing the difficulty of approach by an enemy from the sea; and that for this reason, did no other objection present itself, the Board would most strenuously oppose the adoption of any part of Major Lennon's plans." The latter authority likewise viewed the project unfavorably, one of their objections being, that it would deprive the poor boatmen of their means of subsistence! Major Lennon's Report was accompanied by a series of propositions for raising the required capital by the Subscription of 600 shares of 500 Pagodas each; for the election of a Committee of Su-

perintendence by the Subscribers; for the supply of the materials by contract; for a remuneration of 15 per cent. on all the expenditure to the executive Engineer; for permission to levy duties, &c. and by estimates of the cost, returns of the trade, tonnage, &c., which have been omitted.

No. 2 is the return of the Tonnage and Trade of the Port (App^ces. S and T) on which the Committee based their calculations of the profits that might be expected to accrue from the undertaking—and Nos. 3 and 4 (App^ces. W X) detail the reports of Sub-Committees on the Surf, Tide, Currents and Soundings at Madras. A valuable and interesting paper by Monr. Duval Piron, on the general subject of improving the communication from the shore (Appendix C) forms No. 5, and the specification of his proposed Pier (Appendix R) is printed as No. 6.]

No. 1.

To

THE RIGHT HONORABLE LORD CLIVE,

Governor in Council,

&c. &c. &c.

MY LORD,

Though the Honorable the Court of Directors did not think proper to give their sanction to the plan and proposal for erecting a solid Pier at Madras, which I had the honor to lay before this Government in 1798, from an apprehension of an accumulation of sand being likely to form, which would in the end render it useless, yet, so strongly is my mind impressed with the great disadvantages to which the trade of Madras is subject, from the natural difficulties which present themselves to a communication between ships and the shore, and from an ardent desire to promote the public convenience, I am induced to offer to your Lordship's consideration, two other modes of obviating those difficulties and facilitating the trade of this Port.

I am the more encouraged in the prosecution of this subject, from a conviction I was taught to entertain of the support of the Honorable the Court of Directors to the general design, were it not for the particular reason above mentioned; since neither of the plans which I have now the honor to lay before your Lordship, are in any respect subject to the same objections.

The difficulty and danger of passing the surf, being the chief obstacle to the safe communication with the shipping, the Plan No. 1 is intended

to provide a remedy for it. By this plan, it is proposed to erect a Pier upon piles of the breadth of 24 feet at top; elevated 10 feet above high water mark, and carried out to the distance of 450 yards from the shore, into a depth of 14 feet low water, which is considerably beyond any effect of the surf, in the most violent weather.

The upper part of this plan exhibits the Pier in its entire extent; and immediately under, is represented a section of the same throughout. At the distances of one hundred and eighty, and three hundred and twenty yards from the shore, an additional breadth is supposed to be given to this work, for the purpose of enabling boats of different sizes to approach, and at those points, for greater security, it is proposed to form islands as high as the floor, to prevent the shock of boats striking against it, as well as to strengthen the work throughout. This is also intended to be done at the Pier head, where vessels of two hundred tons may come close alongside, and land or embark their cargoes, without the necessity of boats.

The manner of constructing this work is particularly detailed in the plan, where a part of it is exhibited upon a larger scale, and the process of its execution, shewn by the order of the letters A, B, C, D, E, F, G. At the foot of the plan is seen in perspective, Pier head with a brig of two hundred tons in the act of embarking a cargo.

Upon the floor of this Pier are proposed to be laid two sets of railways, for the ease of conveying goods along it, by waggons built for the purpose, the advantages of which contrivance are well known; the turning bridges of communication between the railways, are for the purpose of permitting waggons to pass from one to the other, so as to avoid the obstruction which their meeting might otherwise occasion.

With regard to the practicability of constructing this work, though there would be some trouble in driving piles in the surf, yet it is already proved, not only to be perfectly practicable, but the effect derived from them with regard to their stability, is already established as a fact to be depended on; from the instance of those drove in the midst of the most violent surf, for experiment by the late Mr. Baker, which though unconnected and without support, withstood the force of the surf, for six successive monsoons before they were carried away; strengthened therefore, and connected as represented in the enlarged part of this plan, their stability I hope will appear to be perfectly secured.

The timber necessary for the construction of this work, is the chief difficulty to be encountered. It is true that piles of Teakwood and Poon

may be obtained in the quantity, and of the dimensions required, but the effect of the worms upon those timbers is so destructive, that in order to preserve them, it would be necessary to sheath the entire part of each pile immersed in the water, with copper, in the usual way for ship's bottoms, to prevent the ravages of those insects.

But though those timbers would be necessary for all the long piles, yet, from the report of persons sent to examine the woods in the Calastry and Tripetty countries, I learn that a sufficient supply of the finest Redwood and Ebony, may be procured for all the smaller piles, beams, &c. at a moderate price, which will be doubly advantageous in point of expense, as these timbers are not subject to be attacked by the worms, nor are destructible in water as the other woods are.

By the mode of construction detailed in the enlarged section, I hope it will appear, that the utmost strength is gained without offering too great opposition to the waves, and as the only part of the work which may be considered liable to injury, from any very violent weather, or extraordinary high surf, is the flooring; it is my intention that the planks should be framed in plat-forms, to be taken up at the approach of the monsoon, at which time only, it can be supposed to be in danger, and when, as there may not probably be any shipping in the roads, such interruption cannot be attended with any inconvenience.

In a work of this nature, subject as it is to numberless accidents, where seasons and opportunities must be watched, and where a variety of machinery must be used, it is not possible to form a precise estimate of what the amount may be, but after attentively considering the prices at which the different materials may be supplied on the spot, the capacity and hire of the different artificers to be employed, and making a reasonable allowance for casualties, I conclude, that the whole of the work may be executed in the best manner, for two hundred and twenty thousand Pagodas, as may be seen in the estimate subjoined, No. 1. a sum of very inadequate consideration, compared with the great and increasing advantages certain to arise from its completion.

Taking this for granted therefore, I shall endeavour to shew how this sum may be furnished in the easiest way, without exacting an increase of expense from the merchants or ship owners, but on the contrary, in addition to the safety and expedition of clearing ships, and the facility of intercourse, a considerable reduction will take place in the Port expenses, to which vessels of all descriptions are at present subject.

In order to set this in a clear point of view, it is necessary to state the various charges to which vessels are at present subject, in the midst of the inconveniences under which they labor. Though boat hire in Madras roads on the average of the last three years, amounted to Pagodas twenty-eight-thousand and eighty-seven, (28,087) of which, that on account of the King's ships, amounted to Pagodas two-thousand and sixty, seventeen fanams and forty cash, (2060 17 40) and that, on account of the Company's to three-thousand two-hundred and forty-four and fourteen fanams (3244 14 0) the expenses besides of watering, wooding, ballasting, tarpaulin hire, anchorage &c. being considered, I am credibly informed and from examining several bills of charges for landing and clearing out, it appears, that a vessel of small burden cannot clear out from the roads of Madras, under at least half as many Pagodas, as her tonage amounts to, a considerable part of which would be actually saved, compared with the assessment which I shall propose, as will appear from the following statement, and the advantages will operate most in favor of vessels under two-hundred tons, which now suffer the greatest inconvenience, but which could then come alongside the Pier head and do their business at once.

	Pgs.	Fs.	C.
Landing and Transporting Rice	12	6	0
Anchorage	3	0	0
Clearance	1	0	0
* Waterside cooly hire (half saved)	12	0	0
Weighing duty	4	0	0
* Tarpaulin hire	2	0	0
Watering (half saved)	3	0	0
Ballasting do.	8	22	40
* Occasional Boats	2	0	0
Demurrage for delays (half saved)	10	0	0
Total charge Pagodas	58	28	40

Now as some of those charges are not supposed to be relieved by the proposed Pier, I shall argue only upon those charges marked *, which would then be rendered unnecessary, and which in this case, amounts to Pagodas thirty-two, thirty-nine fanams and forty cash, as by the convenience of the Pier, a vessel of the above description could come along side, and directly land her cargo without the medium of boats, her charges then would probably be as follows,

Carriage for one day	Pagodas	1	21	0
Coolies for Waggons	"	2	21	0
	Pagodas	4	0	0

I suppose in addition to this, an impost of twenty Pagodas per 100 tons burthen was levied for all such vessels as come alongside the Pier, discharge their cargo, and water without boats, this vessel being supposed seventy tons, shall pay Pagodas fourteen.

Suppose also, a duty of one per cent was levied on the amount of the cargo, in addition to, and in the same manner valued at the present established duties, in this instance, seventeen garce at sixty Pagodas per garce, one-thousand bags shall further pay Pagodas ten, making a total of Pagodas twenty-eight, whereby it appears there would be an actual saving of eight Pagodas, being nearly fifteen per cent on her port expenses.

But as large vessels could not come along side the Pier, but must either make use of their own boats or of lighters, which might be equally expensive, I propose lowering the rate of wharfage in their favor one half, or to ten Pagodas per hundred tons burthen, which I should hope, would secure to them the same proportional saving; while the duty of one per cent upon all merchandize, indiscriminately, whether landed or shipped, will be considered as very moderate compensation for the great advantages derived from the saving of time, the ease of doing business and the security of merchandize in general; and is not, I am credibly informed, more than equal to the peculation alone committed in Masula boats, which would by this Pier, be prevented, as the opportunity for committing it would no longer exist.

It has been argued against this scheme, that as the "adoption of this Pier, would *do away the establishment of Masula boats*; suppose an enemy should destroy the Pier, or render the destruction of it advisable to prevent his landing, in that case, where there are no Masula boats, how is the communication with a fleet requiring supply, to be kept up."

In reply to this objection I shall only ask, is it a just mode of argument to state in opposition to certain advantages, which cannot well be denied the extreme possibility of an occurrence, from whence there might eventually arise a remote chance of inconvenience, and does it follow, even admitting this possibility, that the present difficulty and danger of communication should be continued, because an enemy might at some future period interrupt an easier mode, if adopted.

Neither is it just to suppose that, even should an enemy or ourselves, from apprehension of an enemy, destroy this Pier, that we are then left without means of communicating with our own shipping, and affording them supplies.

By my plan, though the present construction of boats may be rendered unnecessary at Madras; yet it does not follow that the whole establishment of boatmen is to be done away, or those people driven to seek other means of support, boats and boatmen must at any rate be necessary, though as the construction is supposed to be materially improved, the number may be diminished, at the same time that the accomodation may be considerably increased, neither is it possible, by any destruction of this Pier, which an enemy could effect, to prevent such boats from landing and passing to the lee of, safe into shore at all times, as even were it to be burned to the water edge, it would still afford sufficient shelter to enable any boat whatever to land in perfect safety from any effect of the surf, within a certain distance of it on one side, but even supposing the worst, the whole may be remedied by keeping some Masula boats ready at the approach of a war, or collecting them from other places along the coast, where they must still be necessary.

His excellency Admiral Panier, having suggested to me that the great swell which is constantly experienced at Madras roads, might prevent vessels laying along side the Pier head, I consider it a much better ground of objection, and have therefore dotted on the plan at the termination of the Pier head, the direction in which an addition to it may easily be made, if hereafter found necessary, which would effectually remedy the inconvenience arising from the swell.

The expense of this work, in case the Honorable Company should not think proper to authorize the execution of it from their own resources, I propose, shall be defrayed from a fund raised in shares by public subscription, and to be repaid by certain imposts as above hinted at, granted to the subscribers, by authority of the Honorable Company for a limited period, as shall be more particularly explained at the conclusion, when I shall detail the estimate and means for carrying the work into execution. This mode of raising the sum necessary, I have little doubt, will be cheerfully entered into by the public, in consideration of the great benefits which it will be productive of, and in proportion as it contributes to the facility of trade, must tend to increase the duties derived from it, in which point of view, it is well worthy the particular encouragement and support of Government.

Reflecting, however, that to overcome the difficulties of the present mode of conveyance of merchandize to and from ships, is not the only circumstance necessary to render this port convenient, and conceiving that by improving the natural advantages which the situation of the Pier

affords to a certain degree, not only the ease of communication may be attained, but many other important benefits derived; I have formed the other design, which at the same time that it embraces more extensive accomodation, without being attended with much greater expence, will tend to remedy some other inconveniences.

The late monsoon afforded a strong instance of the inconvenience arising from the coming down of the rivers, on account of the want of a proper embouchure to discharge the great accumulation of water occasioned by the land floods; I have therefore formed the second design, which I conceive may not only afford a sufficient remedy for it, but render unnecessary the labour now ineffectually bestowed in opening the Bar, and also introduce a more extensive water communication through the various parts of the town.

The comparative scale at the foot of the plan No. 2, exhibits on either side of a vertical line, the different heights to which the waters of the sea and those of the river occasionally rise, which furnishes the chief data upon which the plan is founded. There is, however, this difference between them, that whereas one, that of the sea, is actuated daily; the other, that of the river, seldom rises more than once a year, and that but for a few days together.

But notwithstanding this variation in the different levels of waters occasionally communicating with each other, from the extraordinary peculiarity of this communication being cut off by the effect of the surf and southerly winds united, which in a short time choak up the Bar again; the labour of opening it is constantly with every season to be repeated, and no advantages gained from the different elevations to which these waters alternately rise.

It is evident that were it possible to remedy this extraordinary effect, and try every means to keep an open and clear communication between the river and the sea, it would most probably afford an easy passage for boats into the river, whereby all the dangers and delays of the surf might be entirely removed.

As the action of the surf in the south-west monsoon seems to be the principal agent in throwing up the Bar across the mouth of the river, so, in order to overcome this tendency and preserve a passage open, the first step necessary seems to be, to cut off the power of the surf by erecting a barrier sufficiently solid to resist its effects, and then by taking

advantage of the alternations in the different rises and falls of the tides and land-floods, to preserve this channel so guarded against the surf free from any deposition, by suffering at pleasure a torrent to pass through, and this always leaves a backwater at command, which if properly managed, will afford I imagine an adequate remedy for the evil.

It was first my idea that in order to form a perfect communication for boatr and small crafts at all times into the river, it would be necessary to construct a double set of gates in both directions, so as to establish a pond to be used against both tides and land floods, but upon closer observation it appeared to me to be unnecessary, as no material inconvenience can ever arise from boats being obliged to wait the hours of the tides to pass in or out, and during the continuance of the land-floods, there are generally so few vessels at Madras, that the communication may be easily dispensed with for so short a time, particularly when it is taken into the account, that a considerable increase of the expence must attend that addition to the plan.

In forming this design, I have endeavoured to unite what is practicable, without extraordinary trouble and expence, with what is desirable. The difficulty and danger of the present communication are generally admitted. To render a passage safe and easy for vessels of large size and great draught of water, though perhaps possible, would, I apprehend, be attended with such a great expence, as probably to amount to a prohibition. There must be an artificial management of a backwater, to keep any confined channel towards the sea, clear of the deposition of sand which would be a natural consequence of such enclosure. In order, then, to accomplish such backwater, sluices are indispensably necessary, and these when carried beyond a certain scale and extent, would not only require a vast increase of expence in the execution, but be attended with considerable difficulty in the management, besides being much more liable to accident.

Guided by these reflections, I therefore conceived that it would fulfil every moderate expectation, to effect a safe and easy passage for long boats of Men of War, and Indiamen, at the lowest tides; and when the tide was in, even for the common Donies and small craft that bring rice and other grain along the coast. The plan No. 3 intended to produce this beneficial consequence, consists of a series of sluices, each of twenty feet wide, and the floors sunk to six feet below low water at spring tides, with double gates so as to command a backwater in both directions.

These sluices, after making the necessary excavation to enter, are proposed to be guarded from the surf, and south-west winds, by two embankments formed in the most solid manner of piles of earth and stones, as expressed in the plan, and to be carried out to the distance of four hundred and fifty yards, each, from the shore, to the depth of fourteen feet low water, and at their extremity towards the sea, open to the extent of two hundred yards, as under.

In the general plan No. 3 is exhibited the relative situation and extent of the sluice and embankments, and from an inspection of these two plans, the operation of both, and the nature of their construction will be readily understood.

By these means, I conceive a safe and easy passage may be obtained for all vessels within twenty feet beam, and not drawing more than six feet water at the lowest tides, though when the tide is in, those of even nine feet draught of water within the above dimensions of beam, may freely be admitted, and the actual advantage of a harbour may be procured to all vessels of under fourteen feet draught of water within the two embankments, where there is sufficient space secured for the entire number that may be supposed at Madras at one time, to anchor in perfect safety, and even to come ashore from them along the embankments, without expence and delay of boats.

The effect of the sluices affording a water way of one hundred feet wide with a fall of, in ordinary tides, three feet perpendicular height, when all the gates are opened at the same time, may be easily conceived, and the constant daily repetition of this process, will, I imagine be readily allowed, to be sufficiently powerful to carry off any deposition of sand that may be formed.

With regard to the practicability of executing this work, it will be seen at once, that in constructing the set of sluices, the work is nearly the same as that of building the counter scarp wall of the sea face of the Fort, and the instance already quoted of the late Mr. Baker's piles, is sufficient to increase the possibility and effect of that part of the business; the rest of the work then requires no particular ingenuity, being nothing more, than carrying stones and earth to the spot, and throwing them in.

Concerning the effect of the backwater, should it be doubted that it would be sufficient for the purpose intended, it would be easy to introduce the use of ballast lighters to their aid, the work of two of which, at an

expense of thirty-six pagodas each (after the first cost) per month, will excavate from the bottom in the course of the year,* fifty-thousand one-hundred and seventy-six cubic yards, by a very moderate calculation, which is equal to the excavation required to deepen the channel from the sluices outwards nearly three times repeated in the year, as this excavation, to attain all the purposes of entering the river does not appear from careful soundings, to exceed† eighteen-thousand yards. The use of these Ballást lighters must at all events be necessary to deepen the channel in the first instance, and the continuance of them would be attended with very trifling expense, if thought necessary, which I by no means think they will be, as I conceive the operation of the backwater to be fully sufficient for the purpose. But I thought it best to anticipate objections on the subject of deposition, by mentioning an additional mode of remedying its effects.

The advantage of overcoming the danger and difficulty of the surf, and of being able to enter the river in any kind of boats with perfect safety, and which I hope will be admitted; a well founded expectation, is not the only one that will naturally result from this plan.

From observing the soundings in the river, taken before the monsoon, it is evident, that to render it navigable for such boats, as may now be supposed to enter it, will requre little expense, I therefore propose to deepen it towards the bridge next the Governor's gardens, and from thence continue a communication for boats by a cut as marked 0 in plan No. 3 into the ditch of the Black town near the south-west angle, adjoining to which, a basin may be made for the reception of boats, from thence it may still be continued without any material trouble along the south side of the Black town by the glacis of the Fort, and by enlarging and deepening the drain across the esplanade, the navigation may be continued to Popham's broad-way, where another basin may be formed. This same drain may, by the purchase of only two concerns of no great value, be still further carried on in the same direction as far as the low swampy ground now under paddy fields, called Attapollam, about four-hundred yards west of the present Custom house; here I could establish a third basin for the reception of boats, and the delivery of merchandize.

	Dr.		C.		C. ft.		C. ft.		times		in one hour				Days				C. yds.
*	2	×	25	×	7856	=	7856	×	72	=	565-488	×	8	×	300	÷	27	=	50179

	B.		L.		D.		C. ft.				C. yds.
†	160	×	450	×	4	=	488000	÷	271	=	8000

Though the accomplishment of a water communication thus far, may be thought to afford sufficient convenience to the trade in general, and might serve as a limit to this part of this plan, yet in order to extend the great benefit of an easy navigable conveyance in the most general manner, that the very favorable situation of the Black town in point of level affords an opportunity of doing; I shall proceed to mention still further advantages to be derived from it.

From the junction with the ditch of the Black town at the south-west angle; if the ditch were rendered navigable for boats throughout its whole extent, and even along the north face, it would add essentially to the strength of the place, and in this point of view alone, it is particularly worthy of the attention of Government, exclusive of the great convenience it would afford of depositing goods at any of the gates desired, with scarce any expense of carriage. Indeed, the present very insecure state of the Black town, demands some precaution, as there is nothing whatever to prevent a body of Maharatta horse from riding directly up to the foot of the walls, along the north face, and mounting the ramparts from which they could with ease plunder the Black town, nay they could gallop into it round the north-east angle without obstruction, that part being perfectly open; in order, therefore to remedy this defenceless state of the Black town, I propose to form a deep ditch completely round the whole of it, as expressed in the plan, and to communicate with the sea by means of a sluice formed precisely in the same manner as those proposed at the mouth of the river, from which the ditch may be supplied with water. From this ditch before the north face, a cut may with great ease be introduced through the curtain marked ▷◁ in Plan No. 3, and led on to join the Basin in Attapollam, thus might a most complete circulation of the tide be carried through the heart of the Black town, equally contributing to the convenience of trade, the security of the place, and the health of the inhabitants; for by keeping the water in those different basins under command, which may easily be done by gates of a simple construction; the whole force of the tide might be directed to carry off the filth, which now renders the Black town so offensive.

The difference of level throughout the whole of this line being only seven feet seven inches, there can be no inconvenience whatever arising from the execution of this plan. The highest point of this line is at the entrance of Popham's broad-way, where the surface of the ground is seven feet seven inches higher than low water at spring tides.

Having heard it said, that that part of the Black town called Attapollam before mentioned, now a mere swamp, is lower than the sea, I have been at particular pains to ascertain the fact, and am enabled to say that, it is not so low by 4 feet 2 inches, taking the mean height of the sea, which makes it higher than high water mark by 2 feet 8 inches.

By passing so close to the termination of the Clive canal, there is a convenient opportunity of forming a junction with that work, which in every point of view would be extremely eligible, and were a smaller work to the one here proposed, executed at the bar of the river of Ennore, a perfect command of the accumulated waters of both rivers might be accomplished, which might be alternately directed to clearing both Bars and would afford an excellent harbour to many small vessels at all times of the year.

The introduction of merchandize through the river to a point so distant from the present Custom house, would render it impossible to transact the business of that office there longer; it therefore becomes a necessary consequence of this plan, that a new one should be erected in another situation.

Though at first, it appeared to me that the situation immediately above the intended new bridge, near the Governor's garden would be the best for building a new Custom house, and establishing the Europe shops there as the most central, yet as I understand it is considered more eligible that the whole of the trade should be confined to the Black town, I have accordingly relinquished that idea. But in the prosecution of the foregoing design, two situations offer themselves to notice, in either of which, a new Custom house might be placed to great advantage, either within the curtain adjoining the Hospital gate, in the side of the sepoy barracks marked C in plan No. 3, or else, if thought preferable in Popham's broad-way.

Should the former situation be deemed, as I conceive it to be more generally convenient; it would be necessary to form a basin in the ditch, south of the passage way across it, and open another gate opposite to this basin, to be solely reserved for the introduction of merchandize directly into the Custom house within it, while the present gate might remain as it now is for the use of public passengers.

Or should the preference of situation for a new Custom house be given to Popham's broad-way, the site of the little bazar between it and the

esplanade would be extremely convenient for that purpose, and there is ample space behind it for the erection of store houses &c.; but whichever situation might be preferred for this purpose, as the building of a new Custom house, would be only necessary in consequence of this plan for opening the river being adopted, the expence thereof is proposed to be provided in the same manner as that of the work itself, and to be a part of the entire plan.

It has been objected to this plan, that the removal of the Custom house would be highly injurious to those private interests, which have been established in its vicinity, principally upon the presumption of no innovation being introduced, which should remove the immediate seat of the trade so far from its present situation, and therefore as there would be a degree of injustice in such a measure, occasioning considerable losses to individuals, whose speculations were founded upon these expectations; should such improvements be adopted, and the removal of the Custom house take place in consequence, that then the owners of those speculations would have a just claim to indemnity from the Company, for giving their sanction to a plan which should have such an effect.

How far these arguments may weigh, or how far the speculations of individuals, on the consideration of private interests, should operate contrary to the adoption of a great public work of general utility and convenience, it is for your Lordship's wisdom to determine: but however loath I should be to propose any scheme, that should in its consequences prove in the smallest degree prejudicial to any person whatever, it is only proper, lest these considerations should be pressed too far, that I should place all the circumstances fairly in view, in which I imagine, the inconveniences that may be complained against by some, will not appear to be so great as to counteract a plan, which is likely to be attended with the happiest consequences to the trade of Madras.

The present situation of the Custom house must be acknowledged to be very remote from the principal merchants, and by no means particularly convenient even to the Black merchants, and in respect to the effect which the expence of cooly hire from so great a distance must have upon all the articles of consumption, must in some degree be felt by every person in the settlement. The more centrally therefore that all articles of merchandize can be deposited in the first instance, the more generally advantageous it would prove both to the merchant and the consumer.

But by the plan which I have the honor to submit to your Lordship's

consideration, the whole of the trade of Madras, after experiencing the ease and safety of entering this *Port* (which it may by these means become) can be transported to the gates of the Fort, into the heart of the Black town, or along the ditch to any of the gates. Thus would a most general convenience be afforded to all ranks throughout the whole town, which would have a sensible effect in lowering the rates of carriage, and therefore reduce the prices of every article imported.

Instead of a boat, which in no instance of the present construction exceeds two tons, one capable of carrying ten or even twenty tons, may be employed at nearly the same expence, and the goods deposited in the situation desired, with scarce any charge for cooly, comparatively with what it is at present. For if we calculate the cost of landing, suppose 26 pipes of Madeira by masula boats, it will amount to 75 fanams, whereas the same articles, might then be imported to either of the points I have mentioned in the Black town, for about twenty-four fanams, which I shall set down as the probable hire of such a boat, as may then be employed, whereby a saving occurs of more than two thirds, this saving would appear much greater, if calculated on the entire cargo which such boats might carry, but only ten tons are taken as a medium, though the same boats might carry at least twenty tons.

But should the advantage of this saving which would operate so generally, be counterbalanced by the carriage to the buildings near the present Custom house, there is nothing proposed by this plan to prevent the owners from continuing to make use of the present mode of landing or shipping goods, if it should be their interest to do so.

From hence, it appears to me clear, that no absolute disadvantage can arise to the owners of those buildings, erected near the present Custom house, if it even should be removed, while the general benefits resulting from the plan, would tend in a considerable degree to increase the trade of Madras, and thereby the Customs of the Port. The only light in which their interests could be said to suffer is, when placed in comparison with the great advantages, derived by others not burthened with such incumbrances, and who are either free to choose their situations, or who happen to be already more happily situated. But this argument, at the same time that I deny the force of it, only tends to prove the great general utility of the plan itself.

Fully impressed with this conviction, and sincerely hoping that the plan and its consequences may appear in the same favorable point of view

to your Lordship, I shall proceed to a statement of the expence required for the execution of the work, and contrast it with a detail of the means for defraying the amount thereof.

The entire expence of erecting the work I propose for opening the entrance of the river, and deepening the channel both towards the Wallajah gate of the Fort, and by the intended new bridge to the south-west angle of the Black town wall, and continuing it as before described to Popham's broad-way and on to the basin in Attapollam likewise, to complete the canal round the Black town, from the Hospital gate to the north-east angle, and there to join the sea as before described, also to lead a branch through the curtain to join the before mentioned basin in Attapollam, with the consequent expences of new Custom house draw bridges &c. agreeably to plans, will not amount to more than 3,60,000 Pagodas, as will be shewn in the estimate No. 9 annexed.

From an examination of the tables annexed, which are drawn from the offices of Government, it will appear that the duties hereafter proposed, if granted by the authority of the Honorable Company to the subscribers forming a fund for defraying the expences of either of the plans proposed for a period, proportioned to the expence incurred, would yield a considerable profit to the subscribers, that is, suppose that, for the first plan of the Pier, estimated to amount to Pagodas 300,000, which with the expences of supervising &c. might possibly be increased to Pagodas 350,000, the duties proposed were granted to the subscribers for a period of not less than fifteen years.

The capital expended together with the interest for that period at ten per cent will be found to amount to Pagodas 875,000. The income proposed, as deduced from the Customs of only last year, and Master Attendant's Offices for the average of four rather unfavorable years, continued for the same period, will amount to Pagodas 1,071,150 yielding a profit of Pagodas 96,150 over and above ten per cent on the capital. Again, suppose that, to execute the second scheme, the capital laid out on the work, increased beyond the estimate in the same manner to 400,000, this, with the interest for eighteen years, will be found to amount to the sum of Pagodas 1,120,000. The income derived from the duties proposed for the same period, will be found to amount to the sum of Pagodas 145,740 to the subscribers, over and above the capital, and ten per cent interest, exclusive of the advantages of receiving it in annual payments, which if calculated according to the rules of compound interest, will be found to be considerably

greater. When therefore, so very advantageous a mode of laying out money, as either of the schemes herein proposed is at the same time productive of the incalculable benefit to the trade of this Port, which may be confidently expected from the execution of them, I cannot but entertain sanguine hopes of finding the Public, ready to stand forward in the support of whichever of the plans may meet with the sanction of Government, and the general preference of the commercial part of this settlement.

On this account therefore, I submit it to your Lordship's consideration, to propose to the Public at large, the plans which I have the honor to lay before your Lordship, that whichever of them shall be thought most conducive to the general utility may be determined on, and that to induce the Public to enter into a subscription, to raise the necessary fund for carrying the work into immediate execution, Government shall sanction to the subscribers the right of laying the following imposts; viz. upon all exports and imports without exception, a duty of one per cent, and upon all vessels that anchor in the roads, beyond the extent of the Pier or embankments, a duty of tonnage not exceeding ten Pagodas per one hundred tons burthen, and for such as either come along side the Pier, or anchor within the embankments, a tonnage of twenty Pagodas per one hundred tons, and that these duties shall be vested in the subscribers either for a limited, certain, or for an indefinite period, reserving to the Company the right of resumption of those duties to themselves, upon reimbursing the subscribers with an advance of a certain premium on their shares, optional with the Company as may be agreed upon.

The advantages likely to result to the Honorable Company by either of these schemes, are very great, but particularly from the latter, not only the trade of the Port would be very considerably increased by the great facility afforded to it, but additional value would be given to all the waste ground in the Black town, which would by this plan come into general demand, also the great security afforded to the Black town from having a ditch of 60 feet broad and 9 deep, which by aid of the sluices the water may be kept up to, would considerably improve the value of all the property there, and to this the opportunity afforded of always keeping it clean, and thereby rendering the most noisome part of the town, sweet and healthy.

Upon all these different accounts, it would afford me the greatest satisfaction if your Lordship should think proper to recommend the consideration of these plans, not only to the Public in general, but to the different

Boards of Revenue, Trade and Military, as I conceive the extent of the latter plan, embraces objects which may be deemed worthy of the particular report of each, and I am sanguine enough to hope, that their reports would prove favorable.

Though I cannot avoid giving a decided preference to the latter plan, as calculated to afford much more general, as well as more permanent advantages, yet, different circumstances may possibly counteract the adoption of it, I trust however, that your Lordship will bestow upon both, the consideration, which I conceive the subject merits, and as my chief wish in forming these plans is not only to remedy the existing disadvantages of this port, but to extend the beneficial consequences on the most general manner possible. I look with confidence to the support of your Lordship and that of the Public at large, and humbly offer the subjoined propositions to your Lordship's examination, subject to such correction or alteration as may be thought expedient.

I am &c.

FORT ST. GEORGE, 1st *March* 1803.

(Signed) W. C. LENNON,
Captain Engineers.

No. 2.

MEMO.

Total number of Vessels, and their tonnage, arriving at the Port of Madras for the last 5 years.

	No. of			Tonnage.		
	English & other Vessels.	Country Vessels.	Total Vessels.	English & other Vessels.	Country Vessels.	Total Tonnage.
From 1st August 1839, to 31st July 1840........	188	1,429	1,617	*59,030	*98,000	1,57,030½
From 1st " 1840, to 31st " 1841........	208	1,245	1,453	*76,149	*86,000	1,62,149
From 1st " 1841, to 31st " 1842........	252	1,158	1,410	*92,268	*81.000	1,73,268
From 1st September, 1842 to 31st August 1843..	315	1,157	1,472	1,27,907½	80,978	2,08,885½
From 1st " 1843 to 31st " 1844....	294	1,122	1,416	1,23,297	76,124	1,99,421
			Total..	478,650	422,102	

Average of 5 years
English 95,730
Country 84,420
180,150

* * * The separate returns in these years not being obtainable, the tonnage of the country vessels has been computed at the usual average, and the balance left for the English and others.

FORT ST. GEORGE.

Exports.	Ports not Subordinate.			Subordinate Ports.			Total.
	Merchandize.	Treasure.	Grain.	Merchandize.	Treasure.	Grain.	
	C. Rs.	C.Rs.	C.Rs.	C.Rs.	C.Rs.	C.Rs.	C.Rs.
1840—41	63,83,719	61,32,951	95,446	7,67,347	2,30,700	79,032	1,36,89,195
1841—42	82,93,664	54,25,877	67,427	6,33,220	1,02,125	7,278	1,45,29,591
1842—43	78,71,345	38,30,789	1,38,935	6,23,104	2,11,900	5,690	1,26,81,763
	2,25,48,728	1,53,89,617	3,01,808	20,23,671	5,44,725	92,000	4,09,00,549
Imports.							
1840—41	58,92,979	15,89,164	11,01,332	25,98,828	None.	10,85,142	1,22,67,445
1841—42	54,98,057	6,27,927	7,99,734	29,95,655	None.	10,85,630	1,10,07,003
1842—43	48,60,087	5,56,388	7,41,053	29,95,396	12,870	13,13,186	1,04,78,980
	1,62,51,123	27,73,479	26,42,119	85,89,879	12,870	34,83,958	3,37,53,428

Grand Total both Import and Export of the Port of Madras . . 7,46,53,977

No. 3.—On the Currents, &c.

MY DEAR CAPTAIN JENKINS,

I now sit down to inform you of the few particulars regarding the run of the sea and set of the current in the Madras roads, &c. which has come under my notice, although I much fear that my observations have been too loosely made and too over scanty, to be of much service to you. In the first place with regard to,

1st. The distance from shore of the outer surf—From a careful measurement in the months of October, November, and December 1838, it appeared that on occasions,— such as it would be considered dangerous to permit a boat to go off from the beach, the surf extended to a distance of from 450 to 500 feet from the shore, but that, during a smart gale on the 6th December the surf extended to or beyond a buoy, which was 828 feet from the shore, but the confusion was such, as to render the distinction between breakers, (such as occur at sea) and the surf, very difficult. In the next place,

2d. The velocity of the current, was found to vary with the force of the wind and at its maximum, reached to 3 or 3½ miles per hour.

3d. The run of the sea during a monsoon day, such as would be considered dangerous for boats passing through the surf, was found by means of an iron buoy, (which was anchored at 828 feet from the shore) to be five feet, and during a smart gale on the 6th December it was estimated to be nearly double of this, but the want of adequate means on that emergency, prevents my speaking with more precision.

4th. No observations were made to discover the permanency of the soil, but at 828 feet from the shore, the depth of water was then found to be 18 feet, and at 300 feet from the shore, at which I drove a pile, the distance was once measured twenty feet, and afterwards somewhat more, i. e. between 20 and 20½ feet, but beyond this rough sort of measurement nothing was attempted, by reason of the pile, (which was intended for a measurement of the tides) being washed away.

5th. The tides in the Madras roads, at a maximum do not exceed 3½ feet.

6th. The pile above alluded to, was composed of two buoys of Autcha wood, held together by two iron hoops, that was sunk or rather driven to a depth of five feet by means of a hand jumper, moved by five or six

men, but beyond this depth, two hours of hard hammering failed to produce any effect—the pile by reason of bad workmanship at the scarfing was broken on the second day during a moderate swell, and the upper half washed away; on adopting a more secure mode of scarfing, and again driving it to a depth of five feet, it was left to itself for a few days, with a view to see, if the action of the swell would loosen it, and thereby render a further driving necessary, but a rather rough night put an end to these experiments by breaking the pile off at 2 or 3 feet from the ground, the scaffolding however which depended on the pile alone for support, might have been reached by the waves, in which case this second fracture is not at all to be wondered at. I should have mentioned that the pile was 34 feet long by 10 inches diameter, and armed at its lower end by a sharp well made shoe.

The above comprises the little all that I have to communicate to you, and with the wish that it was better worth sending.

True copy
(Signed) T. A. JENKINS.
21*st November* 1843.

I remain,
Yours very faithfully,
(Signed) T. G. TAYLOR.

No. 4.—On the Soundings.

To

J. OUCHTERLONY, ESQ.
Secretary to the Pier Committee.

SIR,

1. I have the honor to forward you for the information of the Pier Committee, the following detailed report of soundings, shelving of the beach to the extent of 200 feet from the bulwark, the rise and fall of the sea together with such further notice of the locality of the sea line, as seems essential to a due consideration of that important project, which the Committee have in contemplation.

2. The soundings were taken at low water, and with so much care and precision, that they may be relied upon.

100	feet from the coping stone.		Dry sand.	
150	do.	do.	1¼ foot	loose sand.
200	do.	do.	6¼ feet	
300	do.	do.	8 do.	
500	do.	do.	9 do.	
600	do.	do.	10 do.	
720	do.	do.	15 do.	

840	do.	do.	18 do.	hard sand.
900	do.	do.	20 do.	
1020	do.	do.	21 do.	
1080	do.	do.	23 do.	
1200	do.	do.	25 do.	

The last sounding was parallel with the Breakwater Buoy.

3. The inner soundings, indicate loose sand gradually increasing to a firm bottom of hard sand, without and beyond 900 feet, the sand is of a greyish color. In the open roadstead there are several patches of clay, in some parts mud, whilst in others sand prevails.

4. The surf broke at 350 feet from the coping stone on the 14th of October 1844, when the last survey was made, and then the weather was moderate.

5 About 500 feet from the road bulwark or barrier, and 400 feet from the inner wash of the surf, is a ledge of sand, and just outside this bank the depth increases from 10 to 15 feet, but within and without this ridge of sand, and excepting that sudden change, the soundings are very regular; this bank doubtless causes the break of the outer surf in rough weather.

6. The declivity of the beach is one foot in every nine, as determined by a levelling instrument.

7. The shifting of the sand within the bank is so irregular and uncertain, that in my opinion it cannot be defined, though at the same time it does not shift to any depth, and would not affect the stability of piles well driven in.

8. The rise and fall of the sea may be estimated at 2 feet 2 inches during the neaps, and 2 feet 10 inches at the full and change of the Moon, but during a heavy gale, from the eastward, the sea has risen, to upwards of 6 feet, and in violent hurricanes, such as that experienced on the 10th of December 1807, when I myself, was on the beach throughout its extreme violence, the sea certainly rose above the beach road-way which was wholly washed away, and I have no doubt that during that tremendous storm, the sea rose at least 10 feet.

9. I am of opinion that the surf in ordinary weather does not rise above three feet, in rough weather about six, and during a gale when the whole of the road-stead presents one continued shew of breakers, the inner tier of breakers or surf may rise as high as 12 or 14 feet.

10. The current is materially affected by the strength and direction of the wind, and at times during either monsoon, I have known it change against its usual course for a few days; and on this very day in the heart of the N. E. monsoon, the current has so much subsided, as to be scarcely perceptible in the outer roads,—the greatest velocity of the current is, in my opinion, at the rate of two and a half miles per hour, the average 1½, and it is stronger in shore than in the offing.

11. All experience tends to shew that the gales of wind and hurricanes have occurred at intervals of several years, and that there are timely warnings or indications of the approach of these severe visitations, and also that they are of short duration; for instance, in the heavy gale of October 1842, when the sea and surf raged with great violence from 8 A. M. on the 23d until 2 A. M. on the 24th yet at 6 A. M. within 24 hours from the commencement of the gale, and a few hours after its decline, the swell and surf had so completely subsided, that boats and cattamarans were enabled to ply.

12. Should any further information be necessary which it may be in my power to afford, I shall at all times be ready and most willing to give it.

I have the honor to be,

Sir,

Your most obedient Servant,

(Signed) CHRIS. BIDEN,

Master Attendant.

MASTER ATTENDANT'S OFFICE,
Madras, *5th December* 1844.

No. 5.—On the improvement of the Communication between the Shore and Shipping at Madras.

The only means that can be employed for improving the communication between the shore and the shipping at Madras is either the erection of a basin into which boats could enter at all seasons, or the erection of a pier of such a length that its head shall be quite out of the surf, even in bad weather.

The impossibility of erecting a basin, the entrance of which could be left free at all seasons being generally acknowledged, the only means that

remains of improving the communication between the shore and the shipping, is the erection of a pier.

The question being thus laid down, it is necessary to examine what are the requisites of the pier in order to conclude from that examination, which of the different structures of this description answers them best, and consequently ought to be preferred; these requisites are:

1st. That the kind of structure adopted should change nothing in the region of the sea, along the coast, and for that, it must oppose no (or, but very little) resistance to its action.

2d. That the stability should be as great as the durability, which cannot be obtained, but if the materials employed for the structure, have the required qualities for these requisites being equally ensured.

The cause to which the coast of Corromandel owes its formation, continuing in action, though much less rapid than it was in former times, new strata of sand are added to ancient ones, and form successive deposits which are not very sensible when they are equally distributed upon a great length of coast, but which would soon appear, if the sands were stopped in their progress by any obstacle; this is what would take place if the structure adopted was a *full* one such as a stone pier, the sands accumulating on one side or other, according to the currents being north or south, would by dint of time, reach its farther extremity, and, from this moment, it would no longer be of any use; this kind of structure, which is besides very expensive, not being fit for the place, there is but an open work which can be erected, without any such inconveniency. The open works are timber piers, for the construction of which nothing but timber is employed; the suspension piers, for which the piles for the pillars and the planking only are of timber, the remaining being of wrought iron and cast iron, and at last, the *fixed* pier similar to the one projected, which are wholly of wrought iron and cast iron, the planking excepted. To pronounce with exactitude, upon the merits of these different systems, we must examine the advantages and inconveniences presented by each of them. The timber piers have, upon the suspension pier, the advantage of a greater stability, but they are not so easily repaired and do not last so long, all their parts being equally liable to a rapid decay, while in the suspension piers, the piles which form the pillars and the planking only are exposed to the same causes of destruction. The sea worms are so abundant in the Indian ocean, that at Bourbon, a timber pier was entirely destroyed, in less than one year after its erection. It is true that a pro-

cess has been found out to preserve timber from the sea worms but it is very expensive, of a difficult application and its efficacy has not been as yet sufficiently tested. Besides the timber works at sea offer the inconvenience of being more exposed to the action of the sea and of the wind, on account of the necessity of giving large dimensions to the piles, braces stays &c. in order that they can resist the forces exerted upon them. The suspension piers have no advantages that the fixed piers have not, in a same degree, while they are liable to many inconveniences to which these are not exposed. At first, it is certain that, whatever may be the precautions taken, timber piles will never last so long as wrought iron ones afterwards, the points of rest of the chains of suspension, being at a great height above the level of the sea, the force which tends to make the piles of the pillars yield, exerting itself upon these single points, is much greater than if it was distributed on the whole length of the pier, and, acting on a shorter lever. The chances for the piles sinking, after having been driven, are also greater. The whole weight of the pier pressing upon the small number of piles forming the pillars, the pressure as to the section of each pile, is much more considerable than if it was equally pressing upon a greater number of piles. Besides, among the suspension Piers existing, there is none that has a sufficient breadth, for the wants of the trade at Madras, the Brighton Pier being only 12½ feet broad. This single consideration would be enough to prevent the adoption of a suspension Pier for Madras. A Pier similar to the one projected, will do much better for the place, being in the mean while less expensive, of a more easy execution and not liable to so many repairs in a same space of time. It now remains to consider if in this structure all the requisites of stability, solidity and durability, are sufficiently ensured. As to the stability, there is no doubt but it possesses it in a greater degree than a suspension Pier, to ascertain if the requisites of solidity and durability are equally ensured, it is necessary to know.—

1st. The character and capability of the sea's bottom within the required limits, for receiving and firmly retaining piles.

2d. The reality of any shifting of the sand, within a certain distance from the shore.

3d. The distance at which, in bad weather, the surf breaks from the shore, the force exerted by the surf, and its angle of incidence with the shore in the respective monsoons.

4th. The extreme height of the waves, in violent monsoons.

5th. The forces that will be exerted upon the Pier, at all seasons.

6th. The part where the projected work will be exposed to the greatest risk of injury, and the precautions to be taken against their being received.

7th. The principle of the structure proposd to be erected, the materials to be employed, their strength, stability, and thence their capability of resisting the force exerted upon the Pier, their durability and the expedients to be resorted to, to preserve the structure from a rapid decay.

The bottom of the Sea at Madras is a stratum of sand, white and grey, perfectly pure, and consequently of the best character for receiving and firmly retaining piles ; the sand may have a less or greater thickness above the stratum of clay, upon which it rests, without any inconveniency for the hold of the piles ; for if this thickness of the sand is such that the piles can be wholly driven in, the depth attained will be so much greater, while if the clay is to be met, before the piles are sufficiently driven, this inferior stratum being harder, the depth attained will be less, but on account of the greater hardness of the soil, the hold of the piles shall be as great.

Shifting sands do not exist, but at the mouth of large rivers where a violent current, in its encounter with the sea, meets with a great resistance producing eddies which moving the bottom of the sea, throw off the sands on one side and another, and thus form sandy banks that shift their position according to the direction of the currents. No such thing existing at Madras, we may conclude a priori that there are no shifting sands. The theory, in this circumstance, agrees with the facts. The divers interrogated by Capt. Biden, have declared that, beyond two fathoms, they have never observed any shifting of the sea's bottom. It is on this side only that there is a sort of shifting bank, so that differences may have been found in sounding where it exists, and attributed to shifting sands while they were owing to the shifting of the bank, according to its being at a less or greater distance from the shore. It results from the soundings taken last November, that, from the beach to a distance of 80 fathoms where the depth of water is 9 feet, the slope of the sea's bottom is nearly regular, that, at a distance of 90 fathoms, the depth is 14 feet, which gives a difference of 5 feet for a length of 10 fathoms only, while, for a length of 60 fathoms from this point, the depth of water at 150 fathoms from the shore being 23 feet, the difference is but 9 feet. Thus the bottom of the sea, within these limits is composed of two

regular slopes, between which there is a much steeper one of five feet in ten fathoms; from which we must conclude that this is the point where the surf begins to rise. These data agree with the observations of Mr. Taylor and Mr. McKennie, according to which the exterior limit of the surf in ordinary weather is fixed at 460 feet from the shore.

The distance at which the surf breaks from the shore, as has been stated in the preceeding para, is never more than 80 fathoms in ordinary weather, and according to the observations of Mr. Taylor, 133 fathoms in bad weather, thus the force exerted by the surf cannot be greater than that which is produced by waves 5 or 6 feet high, for when the height is greater and the sea is very heavy, the surf breaks beyond its farther limit, and is confounded with the breakers existing all over the roads. The angle of incidence of the surf with the shore has been found by Mr. Taylor to be 3 degrees, but though it should be 10 or 12 degrees, the obliquity of the waves would still be so small, that their shock may be considered as being perpendicular to the coast.

Mr. Taylor has observed the height of the waves at Madras with all the accuracy that this learned Astromomer brings in all his scientific observations, and never found it to be more than 10 or 11 feet, which gives 5 or 5½ feet only for the height above the level of the sea. On that subject Cotton says, with great correctness, at Madras, hurricanes never last more than a few hours, thence there is no time for the sea to rise to any great height.

According to the observations of a very able Engineer, a stone 8 feet in every dimension resting upon an even plane would resist the force exerted upon it by waves 20 feet high. The weight of a stone measuring 512 cubic feet being 896,000 lbs, the pressure of each square foot, is 1,400 lbs equal to the force exerted by the waves upon a same surface, but the height of a wave at Madras being only 10 or 11 feet, the force exerted by them will be 700 or 770 lbs for each square foot in bad weather.

The part of the projected work, exposed to the greatest risk of injury, will be near the beach, for it is upon the shore that the sea breaks most violently. Against the accidents to be feared, the precautions to be taken will be to sink the foundations of the masonry work, forming the head of the Pier ashore, to such a depth that there will be no risk of its being washed away by the sea.

The system, after which the projected structure is to be erected, is contrived so that all its parts will have to support an equal weight and to

stand an equal exertion. It consists in wrought iron piles driven at the greatest depth possible, and tied, the ones to the others by braces of the same metal, by the means of cast iron collars wedged upon the piles. Being thus bound together, one of the piles cannot yield without the others yielding at the same time. The effect of this contrivance is that no part of the Pier can yield unless the braces which bind the piles are torn off, the Pier being fixed at one end in a solid masonry work, and, at the other end, at a plat form composed of a great number of piles tied together in such a manner that it is immovable; it could but slide on the bottom of the sea, if the piles were not driven in; but, even in this case; the weight is so great that, on account of the small surface exposed to the force exerted upon the Pier, it could not be moved. The Pier having its two extremities firmly fixed and immovable there is no risk of its yielding on one side nor on the other, besides, this effect is so much the less to be feared that the direction of the force exerting itself upon the Pier, being, as has been afore stated, perpendicular to the coast, tends to crush or tear it off rather than to make it yield; therefore, we must calculate what will be the force exerted, and the resistance opposed by the piles and the braces which bind each row of the Pier to the neighbouring ones. Admitting the most unfavourable circumstances, that is to say, a maximum of force exerted upon the greatest surface possible, and a minimum of intenseness for the resistance, it will be easy to ascertain whether this resistance is sufficient or not. We supposed that the waves will rise to the height of the middle braces of the rows which are 7 feet above the level of the sea; then the force will be exerted upon it, upon the braces below, the half parts of the cross braces which bind them, and upon the piles, on a length of 11 feet.

The area of one of the braces is 3*sq. f.* 135*sq. i.* which gives for the four 15*sq. f.* 108*sq. i.*; it is for a half part of a cross brace 2*sq. f.* 69*sq. i.* and for the 4 together, 9*sq. f.* 132*sq. i.*; the area for a pile, supposing it equal to that of a square inscribed in a circle of the same diameter will be 3*sq. f.* 30*sq. i.* for a length of eleven feet, and for the 3 piles 9*sq. f.* 9*sq. i.* Thus the whole surface exposed to the shock of the waves will be 33*sq. f.* 42*sq. i.* admitting now that the force exerted is the same for the whole height of the waves, though it is not so, it will be, at the rate of 770lbs. for each square foot, 25634lbs or 229 *cwt.* for a surface of 33*sq. f.* 42*sq. i.* This force as we have already stated tends to bend and crush the braces, or tear them off. Let us suppose that the piles will offer no resistance, and calculate only that of the braces which bind them. The area of the transverse section of one of the longitudinal braces is 6*sq. i.* 120*sq. l.* which gives for the six 41*sq. i.* It is for the transverse section of the diagonal

braces 3*sq. i.* 24*sq. l.* for each and for the four 12*sq. i.* 96*sq. l.* consequently the whole area of the wrought iron braces is 53*sq. i.* 96*sq. l.* The resistance to the traction of wrought iron being 90 *cwt.* for a square inch* the whole resistance will be 4830 *cwt* and relatively to the power as 21 to 1.

But it is not only the wrought iron braces which resist the force exerted upon the rows of the Pier. The supports of the rails and the planking resist in the same manner, for the first cannot give way without the last being torn off at the same time. Now the area of support is 60*sq. i.* which gives for the four 240*sq. i.* the area of the planking being altogether 600*sq. i.* the whole area of the timber work will be 840*sq. i.* estimating the resistance to the traction of teak wood to be only 10 *cwt* for each square inch† the whole resistance will be 8400 *cwt* which added to 4830 *cwt.* resistance of the wrought iron braces will give a total of 13,230 *cwt.* The force exerted being 229 *cwt.* the proportion as to the resistance will be as 1 is to 58, but the resistance is still increased on that account that the braces which bind two rows, cannot be torn off, without the neighbouring ones are bent and crushed. Besides the structure having a certain degree of elasticity the shock exerted upon one row will extend itself to the following ones, constantly decreasing in intenseness so that the force, exerted at the point which receives the shock will be less than has been estimated ; it is therefore perfectly established that the stability and solidity are much greater, than is required to stand the force exerted upon the Pier, it remains now to examine if it ensures equally the requisite of durability, on the subject, let us say, at first, that the fears entertained of a rapid corrosion of iron are generally exaggerated.

This is what we read, in the Civil Engineer and Architect's Journal vol. v. page 255, in an article upon iron ship building.

The *corrosion* of iron plates by the action of the sea water proves a groundless alarm, no case of destruction from this cause, in many years experience has yet occurred. In the same vol. page 54 in speaking of a bridge of iron wire built at Brest, it is said.

" It appears from the *proces-verbal* 1st that the continuous ligature, which covered the cables, was slightly attacked, but that, by the first scratch of the file, the oxidized portion was removed, 2d that the exterior wires of the cables showed slight traces of oxidation, but that the slightest

* 1. The maximum of resistance to the traction of wrought iron is more than double than what has been estimated in the calculations.

† 2. The maximum of resistance to the traction of teakwood, supposing it is the same as that of oak, is ten times as much as has been estimated in the above calculations.

scratch of the file caused them to disappear, 3d that the interior wires of the cables were perfectly untouched." Eight years is a short space of time, but if we consider that the effects of oxidation probably continues to decrease, we may conclude that they are not so very rapid, and that the fears entertained, upon this point, are greatly exaggerated.

In the Select Committee upon Steam Navigation, June 1834 McGregor Laird Esq. being interrogated. Can you state any thing as to the durability? The Alburkah, when I left her had been in water about three years, and I could see no symptoms of decay in her.

Was there no corrosion? 'There was not any that was visible.' It appears to me generally that, after the first scale comes off the iron, very little effect is produced by the corrosion. Whenever the iron is in contact with wood, it is sure to go, the acid of the wood destroys it. Iron vessels have worked on canals for 35 years, without repair; the two iron boats built for the Seine in 1822, as yet shew no symptoms of decay. (It must be observed, that iron vessels are built with plates a few lines in thickness.)

The suspension Pier at Trinity near Edinburgh, was built in 1821, and is still in a very good state of preservation.

The erection of this Pier, of a similar one at Brighton, the great extension given to iron ship-building, are as many proofs of the advantages there are to substitute iron for timber, for these kinds of structure, and that the builders are no longer stopped by the fears of a too rapid corrosion. M. Mallet estimates the progress of oxidation to $\frac{6}{10}$ of an inch in a century, and still his experiments have been made upon irons, for the preservation of which no means had been employed. Those that are employed now, consist in the application of minium of coaltar on the iron while it is hot, of a compound of tallow, bright varnish, arsenic, and brimstone, and at last, in the process called *zincing.*

On these the following remarks are found, in the Civil Engineer and Architect's Journal.

In speaking of the iron, Queen Steamer, it is said there is no appearance of corrosion, the red lead being fresh on the plates, and neither shells, barnacles nor any foulness was on her bottom. This desirable result is caused by the single application of a compound of tallow, bright varnish, arsenic and brimstone.

On the process called zincing.

Messrs. Porter and Co. (by their patent process on Mr. Sorel's principle of zincing iron, and thereby giving it an immoveable coating which effectually prevents oxidation, galvanize any description of wrought and cast iron work. The complete success of this process is now fully established, and in France several manufactories have been worked under the patent for 5 years. The French Government have taken license, and established manufactories at Brest, Cherbourg &c. which are under the direction of Mr. Sorel.

If it is proved, that the compound employed for the Iron Queen, is as effectual, as it is said, it is this process, which ought to be resorted to, as being economical, and of easy application. However, the projector of the Pier, ought to be left free to choose, out of the processes now employed for preserving iron from oxidation, such an one as would prove more effectual, after having observed them, where they are applied. It results from what has been here aforesaid, that the requisites of durability, are as well ensured as can be desired. In any case, the projector of the proposed Pier, cannot pretend that it will last for ever, but, that it will only last longer, than any other that could be adopted, being, at the same time, less expensive and not liable to so many repairs, in the same space of time. Although the piles, should last but thirty or forty years, and we are fully convinced they will last more, there would be no great harm if, after so many years, one of them was to be replaced, as during this space of time, the Pier will require but very little repairs; to provide for those to come, a small sum of money, may be levied every year on the returns, which consequently will be hardly affected.

The farther limit of the surf never being more than 130 fathoms from the shore, the length of the Pier ought not to be more than 308 yards, and even 278. If this length was found to be sufficient, that of the platform could be increased and carried from 84 feet, it has in the project, to 140. The height of the Pier, above the level of the sea, being 14 feet, and that of the waves, in bad weather 5 or 5½ feet only, above the same level, there is no risk of the planking being torn off, nor even for receivng any injury. However for greater security, a space of one or two inches has been left between planks, so that the action of the sea should be much less, if it was to rise to such a height, which has never been seen, and seems to be quite impossible.

We dare to expect that the explanation we have given, will enable the Committee for the improvement of the communications between the

shore and the shipping at Madras and the public at large, to decide if, in the projected work, the requisites of efficiency, stability and durability are sufficiently ensured.

the 21st of December 1843.

(Signed) P. DUVAL PIRON,

Chief Engineer at Pondicherry.

SPECIFICATION of a Wrought Iron Pile Pier to be erected at Madras.

GENERAL DESCRIPTION.

The Pier to extend at right angles to the Beach from a line beyond the reach of the surf, to the distance of nine hundred feet seawards.

The roadway to be fourteen feet above spring tide level, thirty feet in width, and supported on three parallel rows of wrought iron piles.

The Pier to be terminated by a platform, eighty-four feet in length forty-two feet in width, and raised to the same level as the rest of the Pier.

Four double cranes to be placed upon the Pier head, for loading or discharging lighters or launches; two railways to be established from these double cranes to the other end of the Pier, and the covering planks of the entire Pier to be secured on the transverse beams leaving between them a space of one inch, or one inch and a half.

Foundation.—This is to be formed of wrought iron piles five and half inches in diameter. They are to be of round Iron, spaced eighteen feet longitudinally, and fourteen feet transversely from centre to centre. These piles to be driven into the ground from nine to twelve feet and to be lengthened as the water deepens, so that each part of the Pier shall stand at a uniform height of fourteen feet above spring tide level.

Cast Iron Collars.—Along each pile and at an equal distance, cast iron collars to be fitted and keyed. These collars to be two

inches of rim, and having as many jaws as is necessary for the admission of the props and braces.

Props Horizontal.—The longitudinal braces to be of flat iron, three and half inches broad by two inches thick; this first dimension to be the same for the props, the transverse and angle braces, their thickness being one and a half inch; the diagonal braces to be of round iron, two inches in diameter.

The props and angle braces to be pinned up to the longitudinal and transverse braces by iron pins, one and a half inches in diameter. The longitudinal, transverse and diagonal braces to be secured at either end, to the jaws of the cast iron collars, disposed for their admission by keys, eight inches long two inches broad and one inch thick.

Necessary Additions.—A wrought iron railing to be secured along each side of the roadway which will be changed for posts and chains on the pier head. Top rail to be one inch and three lines in diameter, the uprights two inches, and three feet long. Diameter of chain posts three inches, size of chains half an inch, four double cranes, iron stairs, ladders and other aparatus to be placed on the platform terminating the Pier.

A cast iron water pipe leading from the reservoir to the end of the Pier the piles supporting the platform to be increased in diameter from five and half to six inches.

Wood Work.—To be of teak of the best quality. The beams which lie transversely to be ten inches by six and firmly secured on the upper longitudinal braces by iron bands nailed upon them. The supports of the rails to be seven inches by five, notched into the transverse beams and bolted together. The planking to be ten or twelve inches broad, by two inches thick.

(Signed) P. Duval Piron.

ESTIMATE OF THE PIER TO BE ERECTED AT MADRAS.

CAST IRON.

		lbs.	lbs.	
9 Piles 5*in.* 5*l.* in diameter and 25 feet long weighing each	- -	2,00,6,00	1,8,05,4,00	
15 do. 27 do. do.	- - -	2,16,6,48	3,2,49,7,20	
15 do. 29 do. do.	- -	2,32,6,96	3,4,90,4,40	
15 do. 31 do. do.	- - -	2,48,7,44	37,31,1,60	
15 do. 33 do. do.	- -	2,64,7,92	39,71,8,80	
15 do. 35 do. do.	- - -	2,80,8,40	42,12,6,00	
15 do. 37 do. do.	- -	2,96,8,88	44,53,3,20	
15 do. 39 do. do.	- - -	3,12,9,36	46,94,0,40	
15 do. 41 do. do.	- -	3,28,9,84	49,34,7,60	
15 do. 43 do. do.	- - -	3,45,0,32	51,75,4,80	
28 do. 45 do. do.	- -	3,61,0,80	101,10,2,40	
Total Weight for Piles.	- - - - - - -			498,290,40
6 Longitudinal braces 17*ft.* 3*in.* long 3*in.* 5*l.* broad and 2*in.* thick weighing each *lbs.* 407,79	- - - - *lbs.*	2,44,6,74		
6 Cross braces 13*ft.* 3*in.* long, 3*in.* 5*l.* broad and 1*in.* 5*l.* thick weighing each *lbs.* 234,92	- - - - *lbs.*	1,40,9,52		
12 Props 13*ft.* 8*in.* long, 3*in.* 5*l.* broad and 1*in.* 5*l.* thick, weighing each *lbs.* 242,31	- - - - - - - - *lbs.*	2,90,7,72		
4 Angle braces 17*ft.* 6*in.* long 3*in.* 5*l.* broad and 1*in.* 5*l.* thick weighing each *lbs.* 310,27	- - - - - - *lbs.*	1,24,1,08		
4 Diagonal braces 22*ft.* long and 2*in.* in diameter weighing each *lbs.* 233,42	- - - - - - - *lbs.*	93,3,72		
32 Keys 8*in.* long, 2*in.* broad, and 1*in.* thick, weighing each *lbs.* 45	*lbs.*	14,4,00		
28 Iron pins 8*in.* long, and 1*in.* 5*l.* in diameter, weighing each *lbs.* 397	*lbs.*	11,1,16		
9 Wedges 3*in.* long 6*in.* broad and 1*in.* thick, weighing each 0,84	- *lbs.*	7,56		
6 Uprights, 4*ft.* long, and 2*in.* in diameter weighing each *lbs.* 4244	- *lbs.*	25,4,64		
			Carried over.	498,290,40

		Brought forward . .	498,290,40
27 Bands 1*ft.* 6*in.* long 2*in.* broad and 1*in.* thick, weighing each *lbs.*10,12 *lbs.*	27,3,24		
2 Top rails, 18*ft.* long and 1*in.* in diameter, weighing each *lbs.*47,70 *lbs.*	7,5,40		
4 Rails 18*ft.* long, 2*in.* broad and 1*in.* 5*l.* thick, weighing each *lbs.*182,34 *lbs.*	72,9,36		
Total weight between two rows -*lbs.*10,554,14			
For 49 Similar ones - - - - - - - - - - -			*lbs.*517,15,2,86

129 Cross braces weighing - - -	234,92	30,304,68	
86 Angle braces do. - - - - -	310,27	26,683,22	
54 Diagonal braces do. - - - -	201,59	10,885,86	
230 Keys do. - - - - -	4,50	1,035,00	
215 Iron pins do. - - - - -	3,97	853,55	
75 Wedges do. - - - - -	0,84	63,00	
30 Posts for chains do. - - - -	42,44	1,273,20	
70 Bands do. - - - - -	10,12	708,40	
160 Feet of chains do. - - - -	2,65	424,00	
300 Feet of rails do. - - - - -	10,13	3,039,00	
Total weight for the platform - - - - - - - - -			75,269,91
Total weight of Cast Iron - - - - - - - - - - -			1,090,713,17

WROUGHT IRON.

2 Collars weighing each - - - -	123,08	246,16	
1 do. do. - - - - - - - -	138,12	138,12	
2 do. do. - - - - - - - -	133,10	266,20	
1 do. do. - - - - - - - -	148,14	148,14	
2 do. do. - - - - - - - -	163,18	326,36	
1 do. do. - - - - - - - -	208,30	208,30	
Total weight for one row.		1,333,28	
For 48 Similar ones - - - -			63,997,44
4 Collars weighing each - - - -	118,06	473,24	
8 do. do. - - - - - - - -	133,10	1,064,80	
22 do. do. - - - - - - - -	148,14	3,259,08	
15 do. do. - - - - - - - -	163,18	2,447,70	
23 do. do. - - - - - - - -	178,22	4,099,06	
2 do. do. - - - - - - - -	193,26	386,52	
10 do. do. - - - - - - - -	208,30	2,083,60	
Weight for the platform. - -			13,813,40
Total weight of Wrought iron - - -			77,810,84

WOOD WORK.

	c.y.	c.f.	c.i.	c.y.	c.f.	c.in.
9 Beams 29*ft.* long, 10*in.* broad and 6*in.* thick measuring each *c.ft.*12 *c.in.*144 is - - - -	4	0	1296			
4 Supports for rails 18*ft.* long, 7*in.* broad and 5*in.* thick measuring each *c.ft.*4 *c.in.*648 - - - -	0	17	864			
18 Feet of planking 29 feet long by 2*in.* in thickness measuring - - - - - - - - - -	3	7	0			
Total between two rows.	7	25	432			
For 49 Similar one - - - - - -				388	22	432
21 Beams 85*ft.* long, 10*in.* broad and 6*in.* thick measuring each *c.ft.*1 *c.ft.*8 *c.in.*720 - - -	27	12	1269			
300 Feet of Supports for rails 7*in.* broad and 5*in.* thick measuring - - - - - - - -	2	28	1584			
85 Feet of planking by 43*ft.* 3*in.* thick measuring - - - - - - - - - - - - - - -	33	22	1296			
For the platform	64	10	720	64	10	720
Total of Wood Work. *c.y.*				453	5	1152
Total of brick Masonry - - - - - -				218	0	0

ESTIMATE.

486*T.* 18*Cwt.* of Cast iron, purchase, freight and putting down included, £24 per ton - - - - - -	116,856	0	0
34*T.* 15*Cwt.* Wrought iron, purchase, freight and setting up included £20 per ton - - - - - - - -	6,950	0	0
453*c.y.* 5*c.ft.* of Wood work, purchase and squaring included at 75Rs. per cubic yard - - - - - - - -	33,989	0	0
3248*sq. yds.* of Planking setting up and bolting included at 1. 8 per square yard - - - - - - - - - -	4,872	0	0
218 Cubic yards of brick Masonry at 12Rs. - - - -	2,616	0	0
For the setting up of beams and supports of the rails	4,000	0	0
Fences to protect the piles at the head of the Pier	2,000	0	0
Flights of Steps, Ladders and various apparatus -	3,000	0	0
Four double Cranes, at £150 each - - - - - -	6,000	0	0
For the direction and Superintendence of the construction of the Pier - - - - - - - - - -	15,000	0	0
Sundries - - - - - - - - - - - - - - - -	4,717	0	0
Total - - - Rs.	200,000	0	0

(Signed) P. DUVAL PIRON.

VII.—*Observations on Evaporation made at the Red-hills near Madras in* 1844, *by Lieut. Ludlow, Engineers.*

This series of observations was undertaken with the intention of ascertaining with as much exactness as possible, what the actual evaporation from the surface of a large sheet of water is, and what proportion it bears to the evaporation shewn by an evaporator exposed on the land in its neighbourhood.

The evaporator employed was a flat brass vessel exposing a surface of exactly 1 square foot, and containing when filled to within an inch of the edge 1 gallon of water. It was painted white inside and was enclosed up to the level of the edge with a double wooden case, in order to prevent the brass from becoming heated.

A gallon of water was poured into the evaporator early in the morning, and the following morning what remained unevaporated was drawn off by means of a syphon into the gallon measure. The measure was then carefully filled up from a graduated glass tube, and the quantity evaporated thus measured with great accuracy.

Two evaporators of this description were used, the registers of which when exposed together under exactly similar circumstances, had been tested and found to agree well. One was then placed in the middle of the Red-hill tank, (which has a surface of several square miles,) being supported on a post firmly fixed, and the other was exposed on the land at a distance of about ¾ths of a mile from the tank.

From a comparison of the registers of these two evaporators the following results have been obtained.

During April the evaporation on the tank to that on the land was as - - - - - - - - - - 1 : 1·3897

May	1 : 1·2744
June	1 : 1·2396
July	1 : 1·1881
August	1 : 1·1736
Mean of the 5 months.	1 : 1·2531

The average evaporation on the tank is therefore $\frac{1}{5}$th less than that on the land, or the evaporation on the land is $\frac{1}{4}$th more than that on the tank, during the hottest months of the year.

The gradual increase however of the proportional evaporation on the tank which is so plain, is a circumstance which it is difficult to assign any certain reason for.

In order to make the observations as complete as circumstances would allow, the temperature of the water in both evaporators, the temperature of the water at the surface and bottom of the tank, as well as the temperature of a Thermometer freely exposed to the sun, were observed at frequent intervals during the day. But neither an examination of these results, nor the *general* hygrometric state of the air, *nor even the force of the wind or* state of the weather satisfactorily account for the gradual increase, which I have above alluded to.

I cannot help thinking that it must in a great measure be owing to the general diminution of the depth of water in the tank, the surface of which from the beginning of April to the 20th of August fell 6 feet 3 inches.

If this should be found upon further trial to be the case, it will render still more apparent the necessity of attending to depth in forming such reservoirs, the amount of evaporation increasing not only in proportion to the surface exposed, but inversely as the depth of water.

What an important item evaporation is in the consumption of water, is very apparent from these observations.

During these 5 months the level of the water sunk 75 inches, notwithstanding falls of rain amounting to 8 inches, so that the total fall was 83 inches, but the amount of evaporation measured during this time on the tank was 53 inches so that only $\frac{3}{8}$ths of the quantity which disappeared could have been available for the purpose of irrigation, $\frac{5}{8}$ths being carried off by evaporation.

Abstract of Observations of Evaporation during the Month of April 1844

April.	At Red Hills. Evaporation in Inches. Tank.	Land.	Proportional Evaporation on Land that on Tank. Being 1.	Rain in Inches.	Temperature of water in the Evaporator. Tank.	Land.	Difference.	Temperature of water in the Tank. Top.	Bottom.	Difference.	Thermometer. in Sun.	Proportion of cloudy sky in 8ths.	Force of wind. lbs. to 1 Sq. Ft.	At Madras. Dry Thermometer.	Wet Thermometer.	Difference.
1													0.45	83.37	76.79	6.58
2													0.82	84.88	78.53	6.35
3													0.80	86.22	80.03	6.19
4													0.10	88.07	80.27	7.80
5	0·3018	0 4233	1·403		,,	,,	,,	,,	,,	,,	,,	1	0.35	86.06	80.69	5.38
6	0·3432	0·4801	1·399		,,	,,	,,	,,	,,	,,	,,	4	0.47	86.04	80.60	5.44
7	0·3636	0·5056	1·391		,,	,,	,,	,,	,,	,,	,,	2	0.65	,,	,,	,,
8	0·3158	0·4243	1·340		,,	,,	,,	,,	,,	,,	,,	2	0.38	83.56	77.06	6.50
9	0·3409	0·4622	1·356		,,	,,	,,	,,	,,	,,	,,	2	0.25	83.50	76.01	7.49
10	0·3467	0·4695	1·354		,,	,,	,,	,,	,,	,,	,,	2	0.59	85.38	80.26	5.12
11	0·3850	0.4840	1·260		,,	,,	,,	,,	,,	,,	,,	0	0.55	87.01	79.13	7.88
12	0·4424	0·5730	1·295		,,	,,	,,	,,	,,	,,	,,	2	0.90	86.93	79.15	7.75
13	0 4345	0·6167	1·419		,,	,,	,,	,,	,,	,,	,,	0	0.93	86.82	80.57	6.25
14	0·4085	0·5514	1·350		,,	,,	,,	,,	,,	,,	,,	8	0.79	,,	,,	,,
15	,,	,,	,,		,,	,,	,,	,,	,,	,,	,,	0	0.88	87.05	80.18	6.87
16	0·4274	0·6142	1·437	None.	,,	,,	,,	,,	,,	,,	,,	0	0.75	86.89	81.12	5.77
17	0·5364	0·7344	1·369		,,	,,	,,	,,	,,	,,	,,	3	0.94	86.77	79.99	6.78
18	0 4611	0·6878	1·492		,,	,,	,,	,,	,,	,,	,,	3	0.34	86.71	79.94	6.77
19	0·4041	0·5838	1·445		83·75	85.67	1.92	87. 1	,,	,,	100. 8	3	0.28	86.78	79.94	6.84
20	0 3987	0·5360	1·344		84. 0	88.17	4.17	88. 1	,,	,,	104.54	2	0.27	86.36	80.06	6.30
21	0·4532	0·6004	1·325		83. 5	87. 5	4. 0	89. 2	,,	,,	104.58	6	0.21	,,	,,	,,
22	0·4199	0·6096	1·452		83. 0	85.33	2.33	86. 4	,,	,,	106.84	2	0.36	86.55	79 90	6.65
23	0·4807	0·8342	1·753		85. 0	87. 0	2. 0	87. 0	84. 5	2. 5	111.73	2	0·87	86.23	79.40	6.83
24	0·4549	0·7130	1·567		83. 5	86.33	2.83	91. 1	86. 4	4. 7	113.76	2	0.85	86.50	79.79	6.71
25	0·4819	0·8100	1·681		86.33	87.67	1.34	90. 8	85. 7	5. 1	111.73	6	0.64	86.87	80.04	6.83
26	0·4883	0·6720	1·376		84.33	85.83	1. 5	90. 3	85. 3	5. 0	108.31	2	0.58	86.47	79.10	7.37
27	0·3218	0·4012	1·247		81. 0	83.83	2.83	85. 2	81. 8	3. 4	104.69	4	0.30	85.76	79.07	6.69
28	0 3987	0·4120	1 033		81. 5	83. 0	1. 5	85. 3	81. 8	3. 5	94.84	5	0.34	,,	,,	,,
29	0·3896	0·4873	1·251		80.88	85. 3	4.17	89. 6	83. 1	6. 5	100.54	6	0.73	87.78	80.77	7.01
30	0·4060	0·4967	1·223		88.67	92.83	4.16	97. 7	91. 5	6. 2	111.85	0	0.57	88.15	81.49	6.67
Means.	0.4082	0·5673	1.3897		83.75	86.51	2.76	89. 1	85.08	4 6	106.83	2·4	0.56	86.26	79.61	6.65

Abstract of Observations of Evaporation during the Month of May 1844.

May.	At Red Hills. Evaporation in Inches. Tank.	Land.	Proportional Evaporation on Land that on Tank. Being 1	Rain in Inches.	Temperature of water in the Evaporator. Tank.	Land.	Difference.	Temperature of water in the Tank. Top.	Bottom.	Difference.	Thermometer in Sun.	Proportion of cloudy sky in 8ths.	At Madras. Force of wind. lbs. to 1 Sq. Ft.	Dry Thermometer.	Wet Thermometer.	Difference.
1	0·4166	0·5091	1·2220	..	80. 0	82.17	2.17	85. 4	81. 0	4. 4	107.27	1	0.64	87.96	81.72	6.24
2	0·4557	0·5859	1·2860	..	80. 0	82.17	2.17	84. 7	80. 9	3. 8	105.31	3	1.05	88.64	81.52	7.12
3	0·4328	0·5470	1·2640	..	80.83	82.17	1.34	84. 9	81. 4	3. 5	106.73	5	1.03	88.44	81.23	7.21
4	0·4349	0·5514	1·2680	..	82.33	83.67	1.34	85. 1	81. 5	3. 6	109.04	0	0.51	88.79	81.33	7.46
5	0·2454	0·3141	1·2800	..	80. 0	81. 0	1. 0	81. 3	76. 5	4. 8	93.12	1	0.12	..	..	..
6	0·5131	0·6298	1·2270	..	83. 0	84. 0	1. 0	86. 2	82. 5	3. 7	109.77	6	0.99	90.98	79.61	11.37
7	0·3996	0·5298	1.3250	..	84.33	86.33	2. 0	87. 3	83. 7	3. 6	105.73	8	1.02	88.92	77.63	11.29
8	0·2144	0·2554	1·1910	..	80.83	82.33	1. 5	85. 2	82. 6	2. 6	89.89	8	0.60	82.91	77.22	5.69
9	0·2847	0·3484	1·2240	..	80.67	82. 0	1.33	86. 5	83. 0	3. 5	106.54	7	0.92	86.70	78.56	8.11
10	0·3813	0·5214	1·3670	..	83. 0	85. 5	2. 5	91. 6	88. 7	2. 9	108.77	6	0.57	88.22	79.51	8.71
11	0·4019	0·4965	1·2350	..	81. 5	83. 5	2. 0	86. 0	83. 9	2. 1	100.65	6	0.58	87.48	79.67	7.81
12	0·4162	0·5389	1·2700	..	82.33	83.33	1. 0	85. 6	82. 9	2. 7	102.15	6	0.59	..	..	..
13	0·4495	0·5880	1·3080	..	82.83	83.83	1. 0	86. 6	83. 8	2. 8	104. 7	1	0.86	88.31	80.73	7·58
14	0·4769	0·6067	1·2730	..	83.83	84. 5	0.67	88. 4	86. 0	2. 4	112. 3	1	1.18	87.99	80.06	7.93
15	,,	,,	..	..	79.17	80.83	1.66	79. 9	78. 3	1. 6	91.27	3	0.07	82.19	77.17	5.02
16	0·3157	0·3677	1·1649	..	80.33	81.83	1. 5	85. 9	84. 0	1. 9	101.11	4	0.07	86.07	81.29	4.71
17	0·3112	0·3632	1·1670	..	81. 5	82.83	1.33	86. 6	84. 4	2. 2	102.15	2	0.27	86.25	80.74	5.51
18	0·2633	0·3212	1·2200	..	80. 5	81. 5	1. 0	84. 4	82. 6	1. 8	100.04	5	0.03	86.28	79.35	6.93
19	0·3715	0·4310	1·1600	·0784	82. 0	83.17	1.17	84. 9	82. 2	2. 7	102.23	2	0.12	..	..	..
20	0·2450	0·3598	1·4690	0·242	82. 5	84. 0	1. 5	85. 0	83. 1	1. 9	106.07	5	0.31	83 67	79.09	4.58
21	0·3195	0·4056	1·2700	..	81.67	83. 0	1.33	81. 8	79. 0	2. 8	102.77	4	0.09	86.06	80.35	5.71
22	0·3686	0·5071	1·3760	..	81.33	83.17	1.84	81. 8	78. 9	2. 9	99.77	6	0.39	86.91	80.07	6.84
23	0·4089	0·5262	1·2870	..	80.67	81.83	1.16	81. 9	78. 8	3. 1	98.96	4	0.33	88.04	80.01	8.03
24	0·4601	0·5816	1·2640	..	84. 5	86.67	2.17	88. 4	84. 6	3. 8	105.94	7	0.32	88.21	80.46	7.75
25	0·4048	0·5096	1·2590	..	80.33	82.33	2. 0	80. 6	75. 6	5. 0	93.69	7	0.65	87.16	80.48	6.68
26	0·4364	0·5778	1·3240	..	80.33	83.17	2.84	82. 2	78. 1	4. 1	96.39	6	0.69	..	..	..
27	0·3806	0·4759	1·2500	..	82. 5	83.83	1.33	83. 4	79. 4	4. 0	103.54	2	0.59	86.90	79.79	7.11
28	0·3453	0·4210	2·2190	0·6840	81.83	82.67	0.84	80. 4	76. 9	3. 5	101.85	7	0.07	87.32	80.26	7.06
29	0·3648	0·4688	1·2880	0·8350	78. 5	79. 5	1. 0	81. 0	77.75	3.25	100.92	5	0·02	85.63	79.59	6.04
30	0·2891	0·4322	1·4950	..	77.83	79.33	1. 5	79. 0	76. 0	3. 0	98.23	5	0.35	86 68	80.46	6.22
31	0·3719	0·4776	1·2840	..	76.67	78. 5	1.83	78. 2	74. 8	3. 4	97. 3	3	0. 6	86.86	81.13	5.73
Means.	0.3729	0.4749	1.2744	0.082	81.24	82.77	1.53	84.22	81.09	3.13	102.04	4.5	0.5	87.02	79.96	7.06

Abstract of Observations of Evaporation during the Month of June 1844.

	At Red Hills.												At Madras.			
	Evaporation in Inches.		Proportional Evaporation on Land that on Tank. Being 1.	Rain in Inches.	Temperature of water in the Evaporators		Difference.	Temperature of water in the Tank.		Difference.	Thermometer in Sun.	Proportion of cloudy sky in 8ths.	Force of wind. lbs. to 1 Sq. Ft.	Dry Thermometer.	Wet Thermometer.	Difference.
June.	Tank.	Land.			Tank.	Land.		Top.	Bottom.							
1	0·3927	0·4933	1·2560		78. 0	80. 0	2. 0	80. 2	75. 8	4. 4	100.92	7	0·64	87·68	81.09	6.59
2	..	0·5142	..		77. 0	81.33	4. 33	82. 8	80. 7	2. 1	101.61	2	0·63			..
3	0·6011	0·7775	1·2930	0·2360	83. 0	84.67	1.67	88. 4	84. 8	3. 6	112.08	6	1.26	91.82	78.24	13.58
4	0·5545	0·7172	1·2930		82. 33	84. 0	1. 67	86. 1	83. 4	2. 7	109.61	1	0.56	90. 99	76·53	14.46
5	0·5475	0·7288	1·3310		82. 33	33. 0	0. 67	85. 3	82. 8	2. 5	108.92	1	0.72	91.17	77.87	13.30
6	0·4176	0·5570	1·3340		80. 16	81.33	1. 17	81. 6	78. 6	3. 0	101.46	3	0.62	88·50	79.35	9.15
7	0·4018	0·5233	1·3020		78. 66	80. 0	1. 14	80. 2	77. 0	3. 2	104. 8	4	0·26	88 53	79.47	9.06
8	0·3594	0·4875	1·3560		78. 66	81.66	3. 0	82. 4	79. 2	3. 2	107.15	1	0.08	88.61	79.57	9.04
9	0·3823	0·4917	1·2860		80. 0	83.33	3. 33	83. 4	79. 6	3. 8	106.31	2	0·07			
10	0·4060	0·5092	1·2540		80. 67	83.33	2. 66	84. 0	80. 0	4. 0	107. 7	1	0·11	88.78	81.09	7.69
11	0·4727	0·5820	1·2340		83. 17	84.33	1. 16	85. 6	81. 8	3. 8	100.77	6	0. 18	90.86	79.86	11.00
12	0.4073	0·4988	1·2250		80. 33	82.67	2. 34	82. 6	78. 4	4. 2	105.15	2	0·36	90.95	80.56	10.39
13	0·4209	0·4883	1·1600		78. 0	81. 0	3. 0	81. 0	76. 4	4. 6	99.23	1	0.17	90.76	81.47	9.29
14	0·3532	0·4360	1·2350		75. 67	78.67	3. 0	78. 4	74. 0	4. 4	95.77	3	0·87	88.87	80.33	8.54
15	0·2895	0·3524	1·2170		75. 67	77. 0	1. 33	73. 4	69. 0	4. 4	93.19	2	0 34	86.49	80.99	5.50
16	0·1922	0·2504	1·3030	1·6350	..	..	..	..	..	..	..	8	0.05			
17	0·1747	0·1914	1·0960	2· 548	73. 0	75.66	2. 66	70. 8	67. 4	3. 4	90.38	6	0.02	82.86	80.18	2.78
18	0·3561	0·4139	1·1620	0· 785	78. 0	80. 5	2. 5	77. 4	73. 4	4. 0	97.15	0	0. 1	84 91	79.97	4.94
19	0·4717	0·5799	1·2300		79. 67	82. 5	2.83	82. 6	78. 4	4. 2	105 15	3	0.37	88.42	79.90	8.52
20	0·3752	0·4522	1·2050		79. 67	81.33	1.66	81. 1	78. 4	2. 7	96. 7	1	0.37	87.73	78.83	8.90
21	0·2429	0·2820	1·1610		77. 17	79.66	2.49	79. 0	75. 2	3. 8	90.73	7	0.14	85.08	78.73	6.35
22	0·4189	0·5133	1·2260	0· 033	77. 0	83.33	6. 33	81. 2	78. 6	2. 6	98.14	8	0.59	87.73	76.29	7.44
23	0·4364	0·5279	1·2100		..	..	..	..	..	..	..	7	0·91			
24	0·5300	0·6726	1·2690		79. 67	81.67	2. 0	82. 4	80. 2	2. 2	99·65	5	0·98	88.69	75.62	13.07
25	0 3948	0 5104	1·2930	0. 065	76. 0	78. 0	2. 0	79. 6	77. 6	2. 0	93·84	4	0.33	88.16	76.41	11.75
26	0·4127	0·4905	1·1890		80. 33	82. 0	1.67	84. 1	82. 3	1. 8	99·01	6	0·64	89.69	78.36	11.33
27	0·4551	0·5416	1·1900	0· 270	82. 33	84.33	2. 0	86. 8	84. 2	2. 6	102·38	2	0·38	89.28	78.12	11.16
28	0·4717	0·5529	1·1720		82· 33	84. 0	1. 67	87. 0	84. 2	2. 8	99.92	4	0·38	89.30	76.60	12.70
29	0·4975	0·5732	1·1520	0· 032	85. 0	86. 5	1. 5	88. 25	85. 12	3. 13	101 33	8	0 35	88·15	77.58	10.57
30	0·3224	0·3885	1·2050	0·0015	..	..	..	..	..	..	..	8	0·15			
Mean.	0.4058	0.5028	1.2396	0.1868	79.4	81.63	2.23	82.0	78.85	3.15	101.36	4	0.42	88.56	78.92	9.64

Abstract of Observations of Evaporation during the Month of July 18

July.	At Red Hills. Evaporation in Inches. Tank.	Land.	Proportional Evaporation on Land to that on Tank. Being 1.	Rain in inches.	Temperature of water in the Evaporator. Tank.	Land.	Difference.	Temperature of water in the Tank. Top.	Bottom.	Difference.	Thermometer in Sun.	Proportion of cloudy sky in 8ths.	At Madras. Force of wind. lbs. to 1 Sq. Ft.	Dry Thermometer.	Wet Thermometer.	Difference.
1	0·4052	0·4855	1·1980	0· 150	83.33	85. 0	1 67	85. 2	82. 4	2· 8	102.38	2	0. 3	86.39	79.51	6.
2	0·2662	0·3058	1·1490		75.75	77. 5	1.75	79. 3	78· 0	1. 3	92. 0	7	0.01	84.40	79.35	5.
3	0.3628	0·4851	1·3370		84.67	86.67	2. 0	87. 2	84· 4	2. 8	104. 6	4	0.19	86.21	79.16	7.
4	9·3794	0·4738	1 2490	0·0025	83. 0	34 66	1.66	85. 2	82· 8	2. 4	101.84	6	0.14	86.46	80 23	6.
5	0·3873	0·4900	1·2650		85.67	87.33	1 66	88. 0	85· 2	2. 8	103.92	6	0.21	86.65	78.71	7.
6	0·3565	0·4514	1·2660		83.33	85.33	2. 0	85 0	82· 6	2. 4	102.38	3	0.36	86.84	78.06	8.7
7	0·2608	0·2920	1·1200	2· 335	,,	,,	,,	,,	,,	,,	,,	6	0.15	,,	,,	,
8	0·4351	0·5179	1·1900		76.33	78 67	2.34	80. 4	78· 2	2. 2	94.77	7	0.74	87 21	75.14	12.
9	0·4347	0·5133	1·1810		80.83	83. 0	2·17	83· 0	79· 8	3. 2	101. 0	7	0. 9	88.49	76.49	12.
10	0·3815	0·4468	1·1710	0· 005	75.67	77. 0	1.33	79 6	77 8	1. 8	92.11	7	0.73	86.00	76.19	9.
11	0·3781	0·4356	1·1520	0· 005	75. 0	78.33	3.33	80. 0	77· 8	2. 2	95.96	7	0.51	88·51	77.31	11.
12	0·3141	0·3756	1·1960	0· 010	74.16	77.33	3.17	79. 0	77· 5	1. 5	93.38	7	0.48	86.48	76·65	9.
13	0.2579	0·2920	1·1320	0· 325	75.75	77. 5	1.75	79. 0	77. 5	1. 5	91.31	8	0.25	85.18	77.09	8.
14	0·2854	0·3266	1·1440	0· 331	,,	,,	,,	,,	,,	,,	,,	5	0.27	,,	,,	,,
15	0·3503	0·4093	1·1680	0· 215	79.33	81 33	2 0	82. 6	79. 2	3. 4	98·54	6	0.09	86.55	78.69	7.8
16	0·3877	0·4601	1·1870	0· 217	83. 0	84·33	1.33	85. 0	82. 0	3. 0	102.46	5	0.19	87·87	79·12	8.7
17	0·2379	0·2733	1·1490	0· 434	79.67	81·67	2. 0	81. 8	78. 6	3. 2	95,54	7	0.04	85·49	78.68	6.8
18	0·2279	0·2517	1.1040	0· 215	78.67	81. 0	2.33	82. 8	79. 4	3. 4	97.23	8	0.05	84.21	78.90	5.3
19	0·1198	0·1348	1·1250		75. 0	77. 5	2. 5	78 0	74. 3	3. 7	87 19	8	0.04	82 00	77.68	4.3
20	0·2929	0·3411	1·1650	0 215	80.67	82·67	2. 0	84. 2	82. 2	2. 0	99·46	7	0·22	83.26	79.04	4.2
21	0·2055	0·2325	1·1320	0· 217	,,	,,	,,	,,	,,	,,	,,	8	0.11	,,	,,	,,
22	0·2937	0·3378	1·1500	0· 213	82. 0	84·33	2.33	86. 2	83. 6	2. 6	100.31	5	0.07	84.37	78·65	5.7
23	0·2808	0·3144	1·1200	0· 435	77.33	79 33	2. 0	81. 0	78. 2	2. 8	94 54	8	0.16	84·20	77.63	6 5
24	0·3303	0·3865	1·1700	0· 435	79.16	81.33	2 17	83. 0	80. 6	2. 4	94.15	8	0.19	84.25	76.75	7.5
25	0·2929	0·3399	1·1600	0· 218	82.33	84. 0	1.67	84 6	82. 5	2. 1	98.38	8	0.14	85.40	77·94	7.4
26	0·2974	0·3469	1·1660	0· 217	80.25	82. 5	2.25	84. 3	81. 3	3. 3	94.77	8	0.12	84.25	77·29	6.9
27	0·2933	0·3399	1·1590	0· 218	81. 0	82 33	1.33	83. 6	81. 4	2. 2	98.31	6	0.25	85.29	78 63	6 6
28	0·3927	0·4692	1·1950		,,	,,	,,	,,	,,	,,	,,	7	0.44	,,	,,	,,
29	0·4684	0·6269	1·3380	0· 217	83.67	85.33	1·66	86. 6	84. 6	2, 0	100.73	7	1. 9	87.35	76·61	10 7
30	0·4285	0·4942	1·1530	0· 435	80.16	81 67	1.51	82. 2	80. 2	2. 0	93.92	8	0 59	86.88	76.65	10.2
31	0·2929	0·3390	1·1570		78.67	80. 5	1.83	81. 4	79. 6	1. 8	92.81	8	0.38	86.35	77·08	9.
Means.	0.3257	0.3867	1.1881	0.2279	79· 9	81·94	2·04	83.09	80·58	2·45	97·19	6.8	0·33	85·80	77.89	7.9

Abstract of Observations of Evaporation during the Month of August 1844.

	At Red Hills.													At Madras.			
	Evaporation in Inches.		Proportional Evaporation on Land to that on Tank, being 1.	Rain in inches.	Temperature of water in the Evaporator.		Difference.	Temperature of water in the Tank.		Difference.	Thermometer in Sun.	Proportion of cloudy sky in 8ths.	Force of wind. lbs. to 1 Sq. Ft.	Dry Thermometer.	Wet Thermometer.	Difference.
August.	Tank.	Land.			Tank.	Land.		Top.	Bottom.							
1	0.3478	0.3948	1·1350	0· 015	80. 0	81.33	1.33	81· 5	79. 2	2· 3	94,46	7	0.42	86.44	76.88	9.56
2	0.4052	0.4934	1·2170		80. 0	81·83	1 83	81 5	79· 8	1· 7	94. 5	7	0,44	86.82	76.45	10.37
3	0 3877	0 4601	1·1860	0. 035	79.33	81.16	1.83	81. 0	78· 6	2. 4	93.96	7	0.07	85.65	77.47	8.18
4	0.4564	0.5425	1·1910	0· 020	,,	,,	,,	,,	,,	,,	,,	7	0.24	,,	,,	,,
5	0 3823	0.4630	1·2110	0· 033	81. 0	83. 0	2. 0	83. 8	81· 8	2. 0	100.18	6	0.28	86.07	77.93	8.14
6	3.4102	0.5050	1·2310	1· 808	82.66	84 33	1.67	84. 6	82· 7	1. 9	100. 0	5	0.27	85.50	78.72	6.78
7	0.3137	0.3615	1·1520	0· 295	79.66	81. 0	1.34	81. 4	79· 4	2. 0	95.38	7	0.18	84.65	78.13	6.52
8	0.3103	0.3611	1·1640	0· 155	78. 0	79. 5	1. 5	79. 4	77· 6	1. 8	94.65	8	0.13	82.98	77.90	5.08
9	0.3178	0 3673	1·1560	0· 033	80.66	82. 5	1.84	82. 4	80· 9	1. 5	99.31	6	0.08	84.93	79.45	5,48
10	0.3282	0.3860	1·1760	0· 017	80.33	82. 0	1·67	82. 3	80· 5	1· 8	97,77	5	0.14	85.83	77.94	7.89
11	0 3811	0.4547	1·1930	0· 255	,,	,,	,,	,,	,,	,,	,,	7	0.52	,,	,,	,,
12	0.3769	0 4447	1·1800	0· 630	77.16	78 83	1.67	80. 5	78· 6	1. 9	98.81	5	0. 5	86.65	77.83	8.82
13	0.3074	0 3503	1·1390	0· 155	77. 5	79. 5	2. 0	79. 8	77· 8	2. 0	97.61	7	0.46	85.80	78.41	7.39
14	0.2987	0.3449	1·1550	0· 083	81.16	83. 0	1.84	82. 1	80· 2	1· 9	107,38	7	0.29	85.10	79.17	5.93
15	0 3478	0.3948	1·1350	,,	81.16	83. 0	1.84	83. 5	81· 3	2. 2	99.46	8	0.25	85.00	78.92	6 08
16	0.3632	0 4218	1·1610	,,	82.16	83.83	1.67	84. 6	82· 7	1. 9	103.23	6	0. 1	86.38	79.67	6.71
17	0.3224	0.3885	1·2050	,,	81.67	83.16	1.49	83. 4	81· 5	1. 9	101.61	5	0. 2	86.20	80,23	5.97
18	0.3769	0.4447	1·1800	,,	,,	,,	,,	,,	,,	,,	,,	4	0.17	,,	,,	,,
19	0.3594	0 4156	1·1560	,,	82.33	83.83	1 50	83. 2	81· 3	1. 9	102.92	8	0. 1	86.93	80.79	6.14
20	0 4064	0.4572	1·1250	,,	81.33	82.83	1.50	82 5	81· 0	1. 5	99.54	6	0.18	86.95	79.07	7.88
Means.	0 3600	0 4225	1·1736	0·1767	30 35	82·03	1.68	82 21	80·29	1.92	98 43	6	0.25	85.76	78.53	7.23

VIII.—*Translation of a Mahratta Document " Account of the Tribes of Mahratta Bramins. No.* 851 *of the Mackenzie MSS.—See Madras Journal vol.* viii *p.* 76—77*)* *Mark* 19 *or* 93̄. By C. P. Brown, Esq.

There are five classes of Bramins among the Mahratta Bramins, called Pancha Dravidas—viz. Cannadi, Tatwaji, Telagas, Aravas, and Guzerati.

The Mahratta bramins are a tribe well known as good soldiers. The Tatwajis intermarry with them; some adhere to the Bhagavat sect; others are Smartas; some are Gōsāvīs who read the tales of Krishna; some read the Sastras and Vedas, setting themselves up for (Vaidicas) *Religieux*; these adhere to the Rug Vedam; and [they consider themselves to be] of the Viswamitra (gotram) stock, or the Causica stock. The Desastha bramins are of the Mahratta race; but they have left the Mahratta country and roamed elsewhere for a subsistence, therefore they are called (Desasthas) foreigners; but they are all of the original caste.

Some of them take service as sepoys; others as menials; some live as *Religieux* reading the Sastra and Veda. Some read the Rig Veda; others the Yajur Veda; some are (*mirāsidārs*) landholders and hold the offices of dēsāhi, dēsapāndya, dēsamukhi, Kulkarni, Sahucār (clerks and money-changers) as it may happen. Some are worshippers of Krishna (literally, readers of the tale of Hari,) and are styled Gōsāvi (Goseyns). On the banks of the Godaveri there is a town named Paithāna, where a Desasthi named Ramadass dwelt, founder of a sect whence he is called a Gōsāvi; having been a long time engaged in performing religious austerities, these at last gained him the favor of Iswara (Siva). This

hermit daily fed four thousand bramins. He is the chief of the Desasthas, and by reason of his learning he is styled the "Noblest in the Conclave." These are of the Bharad-vāja and Vasishtha families.

The Konkana bramins are a class by themselves: named from their native place. They are divided into fourteen families; His highness Bajee Rao (the Paishwa) and Nana Saheb sprung from his race. They left their country and settled at Satara which they erected into a mighty power; their capital being Poona: and promoted many of their fellow countrymen. All these read the Rug Vedam. They bear different family names.

The Carāli Bramins are described thus.* Of these there are twelve sorts: they live at Samanta-vadi, in the Concan. They claim descent from Valmik &c. Certain (rishis) saints cursed him to disgorge the texts which he had learnt, and doomed him to be a Chandala (outcast) for an hour and a half daily at noon.†

These bear the name of Prathama Sakhas or First Learners. (i. e. Those who were first taught the Vedas.) At noon no bramin goes into their houses.‡ They are great worshippers of the Bona Dea (Sacti-puja) and beguile Telugu Bramin youths into their houses; such an one they feed luxuriously and give him a female to attend him, so that attachment for her may keep him there until the anniversary of the "Nine Nights." On this occasion they feed him amply and then bring him before (Devi) the good Goddess, and as he bows down to her they slay him. This is done in every house; §

* In Molesworth's Dictionary of the Mahratta language, page 596 the word "Panchamisal" is explained "A medley: bramins of the mixed blood, of the Kurar, Chit-pavan Desasth &c." In Sanscrit *Karala* denotes *horrid, frightful.* In this place it probably is a fictitious word.

† This probably means that circumstances obliged him to live by some business, such as teaching for his bread: which by the law subjects a man to a curse.

‡ This perhaps denotes that they are engaged in tuition: and as they then lock themselves up, they are suspected of the practices mentioned in the next lines.

§ This alone is sufficient to shew the falsehood of this story.

every Karali bramin in Poona uses these practices ; they believe that the goddess rewards them with twelve years prosperity. This came to the ears of Sri Mant Náná Saheb, who thereupon seized all the Karali bramins in Poona and shaved their heads.*

Since that time they have desisted from slaying bramin youths. At present when the Karali bramins wish to perform the worship of (Devi) the goddess, they invite a bramin of this country, shew him every sort of kindness, but feed him with poisoned food which causes death in the space of a month ; this goes on at the present day.† They are of the Vamana and Karidra families.

Regarding the Chīpōnī bramins ; Parasurama by penance obtained the favour of Siva, and from him descended the seven families bearing this name. They use the Rug-vedam and the Atharvana Vedam,‡ and they practise (pampu-sati) demoniac rites ; some of them are Religieux, and others are lay-bramins (Laukilkas) they use the magic that sends demons into men ; some perform the solemn (yajna) sacrifice. The Concan bramins contract marriage with the daughters of the Chīpōnīs : but never will bestow their daughters on them.

The document here translated seems to have been procured by Colonel Mackenzie in the year 1807, and has attracted some notice because supposed to give curious particulars regarding certain sects of bramins. But it may be more useful as a warning how little we can depend on the information which bramins offer us regarding rival sects. This translation is slightly abridged, a few needless lists of names being omitted. I need not point out its incoherencies. The

* This being the utmost degradation : that this was done is not impossible : but this does not prove that the sufferers were guilty.

† An assertion just as incredible as the preceding fables.

‡ The Athervana Vedam is a treatise on magic.

Sakti-puja among the bramins is somewhat like *Freemasonry* among the Italians ; an expression intended to convey ideas of every horror, while in point of truth the fullest investigation has shewn, (whatever the Abbé Dubois asserts to the contrary,) that this worship of the Bona Dea has never extended into southern India though advocated by several bramins.* When they find an Englishman credulous on this subject they furnish him with many anecdotes, the fruit of a fertile invention: and such may be found scattered through Dr. Francis Buchanan [Hamilton's] Mysore : and in the same author's posthumous work in three large volumes bearing the title "Eastern India" which Mr. Montgomery Martin has published in his own name as if he was himself the author.

IX.—*Contents of the Kērala Māhātmya, by the Revd. Dr. Gundert.*

The Kērala Māhātmya or Keral' olpi (in 104 chapters) pretends to be a Purana which Rishi Garga expounded to the Pandicides during their exile. It is written in a poor sort of Sanscrit; and has hardly any poetical merit. A literal translation of it in Malayalam, and a copious Index; which however in several places seem to be based on another text than the present, help to recognize the Malayalam appellations in their Sanscrit dress.

The three first chapters bear a separate title Cshatravarnanam. They relate the growth of Cārta-Viryārjuna's power who ruled on the shores of the Narmada over eight countries (Avanty-ādy-ashta desheshu) and thro' penance received power to subject even Gods and Brahmans to his sceptre. The Gods consult: Narada prepares two charmed balls, one filled with Cshatria glory, the other with Brahma-tejas and gives them to the wives of the Brahman Jamadagni, and of the Cushica king. The balls are interchanged, and the princess gives birth to the sage Vishvamitra, whilst the Brah-

* Every existing Sanscrit book on the Sacti worship may be inspected in the Library of the Madras Literary Society.

man's son, the incarnation of Vishnu enters the world with the mace (parasu) in his hand. He is called Parasu Rama. One day his father, doubting Renuka's fidelity, orders the boy to slay his mother. He does so; and is directed by the Rishis to atone for his sin by destroying Carta Virya and the Cshatrias, the enemies of the Brahmans; a task which he effected in twenty-one expeditions.

§ 4-11. There ruled once in the Treta-yuga a certain Parasu Rama, who wished to crown his prosperous reign by a perfect donation to Brahmans. He assembled all the Rishis and gave the sixteen gifts in profusion; but Vishvamitra observed, that the most sin destroying gift was a grant of land. Accordingly the king made over to the Rishis all the earth within the four seas, with all the blood guiltiness attached to it, by making them drink the water of possession (a ceremony still observed in transfers of ground). The Brahmans thought proper to turn him out of the property he had given away. but with Subrahmanya's assistance he obtained, by penance, from Varuna the grant of some land to dwell on. The throw of his mace was to determine the extent of the ground: it flew from Canyā Cumāri to Gocarna, and the whole intermediate country of ten yojana's breadth (Malay: version, one yoj), and 100 yojana in length was rescued from the sea. The gods pay a visit to the new country, call it Kerala, the holy land of Parasu Rama; and Shiva condescends to be henceforth worshipped in Gocarna the metropolis (Srī mūla sthānam).

§ 12-47. Brahmans are collected by Parasu Rama to colonize the land: first a poor Brahman from the shores of the Krishna, whose eight sons receive the title of Yogasharyas the eldest being appointed head of all the Brahmans and settled in Vrishādripura (near Gocarna,—others say in Trishivaperur: Trichoor). Other Brahmans are introduced, and settled in different localities; until the number of 64 gramas, or

colonies, is completed. Of these Brahadvana, Sangameshapura and Ganagrama are the three particularly mentioned :— follows an importation by ship of seeds, and all kinds of animals : with eighteen Lamantas or sons of Cshatria's widows from Brahmans Vaishyas (Mal : version Chettis) Sudras and low casts.—Some of the Brahmans emigrated : to obviate which, distinct customs were instituted for the Kerala Brahmans. One Tarana received the hereditary rule over the temples (ālayanam tantrani) which now arose in many places. They are chiefly Ghata puri (Coombla) Maruca (?) Trichamram close to Taliperambu, and to the salubrious seven hills (Saptashailas. Yeli mala M. Mt. Dilli) Caripuri, or Parasu Ramapuri (a residence of the Colattiri ; M. Carippattu) Subrahmanyapuri with a yearly feast to the god of war, and the residence of the only Cshatria whose life was spared by Parasu Rama. (He is called a Mushica Cshatria, and appears to be the Raja of Coombla) Nileshwara with a Samanta prince (Nelisseram) Mūkāmbica, with a Bhagavati temple. Cāveri and other jungle temples, with worship of demons, sprung from Shiva, Lacshmīshapura (Taliparambu, the glories of which are described in glowing terms: its prince is said to belong to the Mushica Cshatria's family, Bālashailam (Cherucunnu) Sahāymalaka (Tirunelli in Waynādu, the chief place for offering Shrāddham) Vihāra puri (Pallicunnu, Saraswati temple) 'Swetāranya puri (Tiruwangadu, near Tellicherry) Trishirahparvatam (Tricherucunnu) with a yearly feast in May, by the celebration of which alone the independence of the country could be secured ; Curumbipuri (worship of a hunting deity and residence of a Samanta the Curumber Raja) Gopacūda puri (the original residence of the Erādi, or Samorin) Vilvādri (Cuvalam) Vātālayam (Guruvāyūr in the Cochin territory whither pilgrims resort to be freed from disease) Sri Cotarapuri (Codungalūr with service of Bhadracali, and rich bazars) Tripūrna (Tripunattunpura now capital of the Cochin Raja) with a Sāmanta and rich Concana merchants. Bālā-

puri (Cochi) near the sea: Simpapuri residence of the Samanta Bhānu Vicrama, Anantashayanam (Trevandram or Tiruananta-puram) Sri Vardhanapuri [Tiruwitan cōdu] full of bazars and elephants the residence of four Samanta brothers; of whom the first Bhanu Vicrama is to rule over Kerala, whilst his younger brother Rana Vicrama is annointed as Viceroy in Gocarna. Lastly Suchindra [Indra's temple] and Canyā Cumari.

§47-53. From this journey Parasu Rama returned to Gocārna, and decided several doubtful cases, which gave rise to the different casts of half Brahmans [Ardhabrahmanas] Ambalavāsi [temple servants] Nambidis, singers, dancers, &c. Brahmans were ordered to live with the women of these castes, as well as with the Sudra wives, in order to multiply Brahmaṇical descendants throughout the country. Some of the half Brahmans [Nambis] were instructed in the use of arms, to defend temples and Brahmans all over Kerala; which for military purposes is divided into three provinces, each with a head fencing school.

Whilst Parasu Rama was engaged in holy services at Subrahmanyapura, a Demon came with Bauddhists, and killed the prince he had placed over the Gocārna province. He went to seek a ruler for the northern parts; and on the seven hills fell in with three princesses whom he gave into the charge of the Brahman deputies of Lacshmipura, telling the Yogasharya to anoint the first prince born by them. [The intention of the Purana is evidently to describe Kerala as being first under the rule of the united Travancore and Colattiri dynasty, the sway of which being contracted by foreign aggression in the North, paved the way for the independent rule of the Colattiri branch].

§ 54-60. Afterwards Parasu Rama went with the Brahmans of these 64 colonies to his residence near the Vrihannadi (M: Pēr-āru, the Ponani river) and ruled the country for 5300

years. He then assembled the Brahmans, and promised to give them rulers, each for 12 years, and brought from the southern shore of the Caveri an excellent Samanta, whom the Brahmans crowned king on the shore of the Vrihannadi [probably a viceroy of the Chola king]. On the Mahamakha feast of the 12th *year they deposed him, and chose another. Twenty-one kings having thus ruled in succession, the last ran away with the crown jewels. The Brahmans were in consternation, but Parasu Rama promised again indigenous rulers, and located two princesses at Sri Vardhana [Travancore] and Mangalapura. The 3d Subhangi at Lacshmīsapura, married to a Brahman. Her son Udaya Varma [head of the Colatiri family] was crowned by the Brahmans as king of the northern half, and presented by Shiva with a ring. He destroyed the Racshasas [Tulu aborigines ?] with their families, and furnished a prince Allōhala, to whom Parasu Rama had confided the care of the Subrahmanya temple, for the pride with which he had usurped the Brahminical territory of eight yojanas extent. Parasu Rama blessed the king, exhorted him to righteousness, and prophesied that one of his successors would prefer wicked Brahmans from the Tunga bhadra to the priests of the country; and thus become the author of a general confusion of castes, which would prove the ruin of the country.

From thence Parasu Rama proceeded to Gopacudapuri (Eranadu) and founded the Samorin's dynasty (M. Tāmūttiri) by depositing a Sāmanta virgin with the Brahman chiefs. Her son ruled in Curupuri, endowed with Parasu Rama's sword.—Lavaputra, descendant of Ayodhya Cshatrias, was placed at Bālāpuri (Cochi): his grandson by a daughter married to a Brahman was Rāma Virya, whose dynasty Parasu Rama's white umbrella (M. Vencotta cuda) is inherited.—But finally Parasu Rama declared whole Kerala to be the property of the Brahmans of sixty-four Grāmas, assembled at Gocārna.

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* Cycle of Jupiter.

§ 61-73. One of the Rishis took it into his head to undo Pàrasu Rama's creation, by preventing the celebration of the yearly feast at Trisiracunnu (§ 35) in order that the fools of Bauddhas might enter the country. Soon after a clever Buddhist woman named Māli appeared on the seven hills; fascinated a Rishi; and procured to the son she bore to him, the right to the crown; by secretly exchanging her infant against that born to the Queen of the 11th Colattiri King. The stolen child was called Mamāli (name of the Cannanur Bibi, and of the Laccadives belonging to her) and brought up under Cannan's fostering care. A powerful minister Crōda who alone knew of the exchange, abode with the supposed prince, till he was of age, and made him King. But Bhadracali on the coronation day refused to protect a prince, whose mother was a Buddhist, calling him Nasamipa, Nasanga, not permitted to approach, from which he took occasion to build a town and chapel Nasamipapuri (Mādāy or Payangadi, south of the seven hills) where as the Index says the first Buddhist vihāra or palli (chapel, mosketi) was erected. By the ministry of Croda, this 12th King entirely changed the rules of the state; and though kind to Brahmans so as to load them with all manner of gifts, he ruled only through Buddhist officers and subjected to them, the whole country from Canya Cumari to Gocarna (akhitām bhuṃim ākramya Buddheis sākam sthita tatat Rājābhut Kerala 'khite) made it abound in pallis and bazars, and during a reign of 35 years set altogether aside the laws of Parasu Rama. When the latter returned, he extirpated the Buddhists, and lopped off the hands and feet of the King. But he, not dismayed, praying to his father the Rishi, had his members restored by degrees; and with the assistance of thirty-five Bhūtas built Vriddhipura (Valarpatnam or Billipatam) ruled there also with Buddhas (whom the Index here calls Mapillas) and stole even the holy sword from Taliparambu, so that he reigned securely without an enemy. But Parasu Rama by his course of devotions brought

the happiness of the infidel King to a sad end. He was detained in the chase by Shiva in disguise; whilst the Queen fell in love with Croda the minister and made offers to him; the flat refusal of which prompted her to devise a speedy revenge. She acts all the part of Potiphar's wife; but the faithful servant, when on the point of being executed, is discovered mounted on the heavenly chariot; and parting, advises the King to go to Mecca, and worship there Vishnu incarnate in all shapes (Vishwa rupavatara) in order to go to Vishnu's heaven. The King did so; and left his maid servant Sphulli to rule in Madai, with Buddhist aid, for evermore. Parasu Rama wished to restore the undiminished sway of the Colattiri princes; but this was rendered impossible by a compromise made in the meanwhile by the rival Queens Sphulli and Subhangi. The taint, brought by this occurrence on the Colattiri family, could only be expiated by the ceremony of Hiranya Garbha; that is, by the creeping of all princes and princesses thro' a golden cow, and by the gift of that, and of a silver bullock to the Brahmans. This holy act to be repeated every 12th year.

§ 74-85. Description of the national feast, maha makham, celebrated at Navayogipura (M. Tirunavai) on the northern bank of the Vrihannadi, where the Brahmans of the sixty-four colonies, the four kings (S. bhūpās Colattiri, Travancore, Samorin, Perimpadappu or Cochin] assemble with all the aristocracy, the 1400 lords [vīrās, M. idaprabhu] 1000 Nāyakas; and all their vassals. Also the Tulu Raja [Tulasibhūs S.] makes his appearance with his Racshasa Nayers. ParasuRama, being there crowned again as king of kings, annexes great promises to the repetition of the feast in every 12th year. [It was celebrated the last time A. D. 1743)—[An account of the 18 gymnastic and warlike exercises (18 āyudhābhyāsa] with the institution of pallestras and headmasters in the four great districts of Kerala. The origin of some caste divisions is explained.

§ 86-95 Particulars about the southern province [Dacshina Kandasya Mahatmya]. Aditya Varma the sister's son of Bhānu Vicrama is made king at Srī Vardhana pura to rule over the land from Canya Cumari to the Ghoza river ; comprising 21 Brahman colonies. Parasu Rama tells him that one of his successors will call for northern Brahmans and honour them above others: from their usurpation, internal commotions will ensue, Brahmans become merchants &c. until Sakas and Buddhas come and overrun the country. A fourth of the whole country is to be set aside, and dedicated to the serpents or Nāgas, the former rulers of the country. Description of the temples at Suchindra, Tiruwanantam &c. also of Bhutapāndya, a holy spot on the eastern border, where the aggression of a Pāndya prince was stopped by divine intervention.

§ 96-100. Colattiri affairs. An Asura Darika attacked the country and encamped on the Srī Mauna Mula Mt. King Kerala Sekhara, the sister's-son of Cula Sēkhara was advised by Cali, the guardian of the land, to build a palace in the S.E. corner of the seven hills. [Index: the Madai palace] when she would come and manifest her glory. The king began the work, and staid with his army on the seven hills. Cali appears and is worshipped by the Asuras with great revellings till she arose, slew Dárika, and frightened the Asuras into subjection. Several new temples are built, and dedicated to Shiva, Cali, Vishnu.

§ 101-102. Genealogy of Colattiri and Travancore (vamsa pāramparya.) Kerala Varma was followed in his just rule over the *middle* province by his sister's-son Arka Tejasah, he by his famous sister's-son Ravi,he by his nephew Vicramāditya, he by his nephew Sunābha. The succession of Kings in the *Southern province*: Bhanu Vicrama, then his sister's-son Rana Vicrama; whose nephew, being made king, had from a Brahman woman a son Vandhivirya Chaturbāhu, that followed

him on the throne. His nephew Jayasākhara, followed by his sister's-son Vijaya Vicrama who rules *now* in the beginning of the " Dwapara yuga" and was by Parasu Rama's order made also king over the *northern* province (in Mangalapura) extending from the Cotishwara to the Cumbha river. This northern province is ruled by Viceroys [ardha simhasana] the first Ardha Chuda Prabhas, then his nephew Mohana Vamsajah; his nephew Sringasura; his nephew Indu Sekhara; his nephew Māna Sekhara, who rules at present for evermore, whilst the Valabhut Bala Sekhara [Colattiri] with 4 mantris and 350000 Nayers is enthroned in Angaviddhi [Valarpattanam]. The latter, at a temple dedication, exhorts once more to the practice of virtue; lest Kerala fall into the hands of Sakas and Bauddhas.

§103, What a useful book! whoever reads or teaches it is freed from all sin &c. with promises of this kind Parasu Rama departs to return to his meritorious penances on the Himālaya.

§104, A long time having elapsed, the Brahmans assembled at Gocarna proposed to try Parasu Rama as he had left them word he would re-appear whenever they should jointly meditate on him. Having made every effort, they saw at last the god coming: but when asked what they wanted him for, they stood ashamed. So he cursed them to live henceforth without his help; and to hold no more their united council at Gocarnam. Yet would he visit Kerala annually after the monsoon on the Onam [Shrāvana] festival: let therefore the Brahmans wait for me! The Rishi concluding this Bhargava Mahatmyam, Keralotbhavam, with the customary praises of its sanctifying powers, received from his hearers remuneration in the shape of 100,000 cows, 1000 elephants and other royal donations.

X.—*Meteorology of Bombay, by Colonel Sabine, from a a paper read before the British Association* 1845.

In a communication which I had the honour to make to the section at the last meeting of the British Association, on the subject of the meteorological observations made at Toronto in Canada in the years 1840 to 1842, I noticed some of the advantages which were likely to result to the science of meteorology from the resolution of the barometric pressure into its two constituents of aqueous and of gaseous pressure. It was shewn, that when the constituents of the barometric pressure at Toronto were thus disengaged from each other and presented separately, their annual and diurnal variations exhibited a very striking and instructive accordance with the annual and diurnal variations of the temperature. The characteristic features of the several variations, when projected in curves, were seen to be the same, consisting in all cases of a single progression, having one ascending and one descending branch; the epochs of maxima and minima of the pressures being the same, or very nearly the same, with those of the maxima and minima of temperature, and the correspondence in other respects being such as to manifest the existence of a very intimate connexion between the periodical variations of the temperature and those of the elastic forces of the air and vapour. The curve of gaseous pressure was inverse in respect to the other two; that is to say, as the temperature increased, the elastic force of the vapour increased also, but that of the air diminished, and *vice versa;* and this was the case both in the annual and the diurnal variations.

Such being the facts, I endeavoured to shew, in the case of the diurnal variations, that the correspondence of the phenomena of the temperature and gaseous pressure might be explained, in accordance with principles which had been long and universally admitted in the interpretation of other meteorological phenomena, by the supposition of an extension in height and consequent overflow in the higher regions of the atmosphere, of the column of air over the place of observation during the hours of the day when the surface of the earth was gaining heat by radiation, and by the contraction of the column during the remaining hours when the temperature was diminishing, and by its consequent reception of the overflow from other portions of the atmosphere, which, in their turn, had become heated and elongated.

According to this explanation, there should exist, during the hours of the day when the temperature is increasing, 1st, an *ascending current* at the place of observation, of which the strength should be measured by

the amount of the increments of temperature corresponding to given intervals of time; and 2d, a *lateral influx of air at the lower parts of the column* of proportionate velocity, constituting a diurnal variation in the force of the wind at the place of observation, which should also correspond with the variations of the temperature in the epochs of its maximum and minimum and intermediate gradation of strength. The anemometrical observations at Toronto were shewn to be in agreement with the view which had been then taken, confirming the existence of a diurnal variation in the force of the wind, corresponding in all respects with the variation of the temperature.

Admitting the explanation thus offered to be satisfactory in regard to the diurnal variations, it was obvious that the correspondence of the annual variations of the temperature and pressures might receive an analogous explanation.

A comparison of the results of the observations at Toronto with those of the observations of M. Kriel at Prague in Bohemia, shewed that the characteristic features of the periodical variations at Toronto were not peculiar to that locality; but might rather be considered as belonging to a station situate in the temperate zone, and in the interior of a continent. The annual and diurnal variations at Prague were also single progressions, and the same correspondence was observable between the variations of the temperature and of the gaseous pressure.

The publication of the volume of magnetical and meteorological observations made at Greenwich in 1842, which took place shortly after the meeting of the Association at York, enabled me to add a postscript to the printed statement of my communication in the annual volume of the Association Reports, shewing the correspondence of the results at Greenwich with the relations which had been found to exist in the periodical march of the phenomena at Toronto and at Prague.

From the concurrence of these three stations, it was obvious that considerable insight had been obtained into the laws which regulate the periodical variations in the temperate zone; and into the sequence of natural causes and effects, in accordance with which the annual and diurnal fluctuations of the elastic forces of air and vapour at the surface of the earth depend on the variations of temperature: and from these premises it was inferred, that the normal state of the diurnal variations of the pressures of the air and vapour, and of the force of the wind in the temperate zone, might be that of a single progression with one maximum

and one mininum, the epochs of which should nearly coincide with those of the maximum and minimum of temperature.

That exceptions should be found to this state of things in particular localities in the temperate zone, was far from being improbable: it could not be expected that the influences of temperature should always be so simple and direct as they appeared to be at Toronto; and a more complex aspect of the phenomena might particularly be looked for where a juxtaposition should exist of columns of air resting on surfaces differently affected by heat (as those of land and sea) and possessing different retaining and radiating properties. In such localities *within the tropics* the well-known regular occurrence of land and sea-breezes for many months of the year made it obvious that a double progression in the diurnal variation of the force of the wind must exist, and rendered it highly probable that a double progression of gaseous pressure would also be found.

It was therefore with great pleasure that I received through the kindness of a Dr. Buist a copy of the monthly abstracts of the two-hourly meteorological observations made under that gentleman's superintendence at the Observatory at Bombay in the year 1843, accompanied by a copy of his meteorological report for that year, possessing a particular value in the full account which it gives of the periodical variations of the wind, and in the explanation which is thereby afforded of the diurnal variation of the gaseous pressure at Bombay, which presents an aspect at first sight more complex than do the three above-named stations in the temperate zone, but which I believe to be equally traceable to variations of the temperature.

TABLE I.—*Bombay*, 1843. *Mean temperature, mean barometric pressure, mean tension of vapour, and mean gaseous pressure, at every second hour.*

Hours of Mean Bombay Time, Astronomical Reckoning.	Temperature.	Barometer.	Tension of Vapour.	Gaseous Pressure.
	deg.	inch.	inch.	inch.
18	78·4*	29·805	0·750*	29·055
20	79 6	29·840	0·766	29·074
22	81·8	29·852†	0·771	29·081†
0	83·2	29·817	0·768	29·049
2	84·1†	29·776	0·795	28·981
4	83·9	29·755*	0·800	28.955*
6	82·3	29·774	0·802†	28·972
8	81·2	29·806	0·801	29·005
10	80·3	29·825†	0·780	29·045†
12	79·8	29·809	0·775	29·034
14	79·4	29·786	0·766	29·020
16	78·9	29·778*	0·761	29·017*
Mean of the Year . .	81·1	29·802	0·780	29·022

* signifies 'minimum.' † signifies 'maximum.'

The Observatory at Bombay is situated on the island of Colabah in N. lat. 18° 54', and E. long. 72° 50', at an elevation of 35 feet above the level of the sea. In the copy of the observations received from Dr. Buist the monthly abstracts are given separately for each month, of the standard thermometer; of the wet thermometer, and of its depression below the dry; and of the barometer. In Table 1. I have brought in one view the thermometrical and barometrical means of the observations at every second hour, and the mean tension of the vapour and mean gaseous pressure at the same hours.

The tension of the vapour at the several observation-hours has been computed from the *monthly means*, at the same hours, of the wet thermometer, and of its depression below the dry thermometer. The values are consequently somewhat less than they would have been, had the tension been computed from each individual observation of the wet and dry thermometers, and had the mean of the tensions thus obtained been taken as the value corresponding to the hour. The difference is, however, so small, that for the present purpose it may be regarded as quite insignificant. It would not amount in a single instance to the hundredth part of an inch; and as in every instance the difference would be in the same direction, the *relative* values, which are those with which we are at present concerned, would be scarcely sensibly affected. The pressures of the dry air (or the gaseous pressures) are obtained by deducting the tension of the vapour from the whole barometric pressure.

The sun is vertical at Bombay twice in the year, viz. in the middle of May and towards the end of July. The rainy season sets in about the commencement of June (in 1843 on the 2d of June) and terminates in August, but with heavy showers of no long duration continuing into September. During the rainy season, and in the month of May, which immediately precedes it, the sky is most commonly covered with cloud, by which the heating of the earth by day, and its cooling at night by radiation, are impeded, and the range of the diurnal variation of the temperature is greatly lessened in comparison with what takes place at other times in the year.

The strength of the land and the sea-breezes in those months is also comparatively feeble, and on many days the alternation of land and sea-breeze is wholly wanting. During the months of November, December, January, and February, the diurnal range of the temperature is more than twice as great as in the rainy season, and the land and sea-breezes prevail with the greatest regularity and force.

TABLE II.—*Bombay*, 1843. *Comparison of the temperature and of the gaseous pressure in the months of May, June, July, and August, when the sky is usually covered with clouds; and those of November, December, January, and February, when the sky is usually clear.*

Hours of Mean Time at Bombay, Astronomical Reckoning.	Temperature.		Gaseous Pressure.	
	November, December, January, and February.	May, June, July, and August.	November, December, January, and February.	May, June, July, and August.
	deg.	deg.	inch.	inch.
18	74·1*	81·9*	29·344	28·782
20	75·3	83·1	29·368	28·806†
22	78·1	84·3	29·391†	28.798
0	80·8	85·1	29·353	28·782
2	81·9†	85·6†	29·230	28·746
4	81·7	85·4	29·195*	28·724*
6	79·6	84·3	29·199	28 740
8	78·4	83·4	29·248	28·754
10	76·9	83·0	29·308	28·800†
12	76·2	82·7	29·316†	28·775
14	75·7	82·6	29·295	28·754
16	74·9	82·2	29·285*	28·753*
Means.	77·8	83·7	29·298	28·763

In addition to the monthly tables, we may therefore advantageously collect in one view, for purposes of contrast, the means of the months of May, June, July, and August, as the season when the sky is generally clouded: and of the months of November, December, January, and February, as the season of opposite character, when the range of the diurnal temperature is greatest, and the land and sea breezes alternate regularly, and blow with considerable strength.

These seasons are contrasted in Table II., which we have given at the foot of the preceding column.

If we now direct our attention to the diurnal variations, commencing with those of the temperature, we find the projections exhibiting a single progression, having a minimum at 18^h and a maximum at 2^h; the average difference between the temperature at 18^h and 2^h being 7·770° in the clear season, 3·71° in the clouded season, and 5·7° on the mean of the whole year; and we perceive that the mean diurnal range of the thermometer is more than twice as great in the clear as in the clouded season.

The tension of the vapour exhibits also the general character of a single progression, increasing from a minimum at the coldest hour to a maximum about the warmest hour, and decreasing uninterruptedly from the maximum to the minimum.

* signifies 'minimum' † signifies 'maximum.'

The very slight irregularity which shews itself at the hour of noon requires to be confirmed by the observations of subsequent years before it can be regarded as possessing a systematic character. When, however, we direct our attention to the gaseous pressure, we perceive very distinctly marked the characters of a double progression, having one maximum at 10^h, and another at 22^h; one minimum at 4^h, and another at 16^h. The double progression is exhibited both in the clouded and in the clear seasons with a slight difference only in the hours of maxima, the principal maximum in the cloudy season being at 20^h instead of 22^h, and in the inferior maximum in the clear season being at 12^h instead of 10^h. The range of the diurnal variation, like that of the temperature, is more than twice as great in the clear as in the clouded season.

If we now turn our attention to the phenomena of the direction and force of the wind, we find by Dr. Buist's report that, for two hundred days in the year, there is a regular alternation of land and sea-breezes. The land-breeze springs up usually about 10^h, or between 10^h and 14^h, blows stronger and fresher towards daybreak, and gradually declines until about 22^h, at which time the direction of the ærial currents change and there is generally a lull of an hour or an hour and a half's duration. The sea-breeze then sets in, the ripple on the surface of the water, indicating its commencement, being first observed close in shore, and extending itself gradually out to sea. The sea-breeze is freshest about 2^h, and progressively declines in the evening hours. The diurnal variation in the force of the wind during these 200 days is therefore obviously a double progression, having two maxima and two minima—one maximum at or near the hottest, and the other at or near the coldest hour of the day, being the hours when the difference of temperature is greatest between columns of air which rest respectively on the surface of land and sea, and two minima coinciding with the hours when the surface temperature over the land and over the sea approaches nearly to an equality.

In the remaining portion of the year, the diurnal range of the temperature is most frequently insufficient to produce that alternation in the direction of the wind which prevails uninterruptedly during the large portion. There appears, however, to have been only one month, viz. July, in the year 1843, in which there were not some days in which the alternation of land and sea-breezes was perceptible. The causes which produce the alternation are not therefore wholly inoperative, though the effects are comparatively feeble during the clouded weather which accompanies the south-west monsoon.*

* There are no data in Dr. Buist's report from which the diurnal variation in the force of the wind may be judged of on the days during the south-west monsoon, when no alteration takes place in its direction. It would seem probable that on such days the variation should be a single progression, weakest towards daybreak, and strongest about the hottest hour of the day.

If we now view together the diurnal variations of the wind and gaseous pressure, we find a minimum of pressure coinciding with the greatest strength of the sea-breeze, a second minimum of pressure coinciding with the greatest strength of the land-breeze, and a maximum of pressure at each of the periods when a change takes place in the direction of the aerial currents; or, in other words, we find a decrease of pressure coincident with the increase of strength both of the land and sea-breezes, and an increase coincident with their decline in strength.

The facts thus stated appear to me to admit of the following explanation:—The diminution of pressure which precedes the minimum at 4h is occasioned by the rarefraction and ascent of the column during the heat of the day, and its consequent overflow in the higher regions of the atmosphere, which is but partially counter-balanced by the influx of the sea-breeze at the lower part of the column. Shortly after the hottest hour is passed, the overflow above and the supply below become equal in amount, and the diminution of pressure ceases. As the temperature falls towards evening, the column progressively contracts; when the influx from the sea-breeze more than counterbalances the overflow, and the pressure again increases, until a temporary equilibrium is restored, when the sea-breeze ceases, and the pressure is stationary. As the night advances, the air over the land becomes colder than over the sea; the length of the column over the land contracts, and the air in its lower part becomes denser than in that over the sea; an interchange then commences between them of an opposite character to that which prevailed during the day. The outward flow is now from the *lower* part of the column, or from the land towards the sea, causing the pressure to diminish over the land; it continues until day-break, when the strength of the land-breeze is greatest, because the air over the land is then coldest in comparison with that over the sea. As the sun gains in latitude, and the temperature of the day advances, the land heats rapidly, the density of the air over the land and sea returns towards an equality, the land-breeze declines in strength, and the drain from the lower part of the column ceases to counterbalance the overflow which the land-column is at the same time receiving in the higher regions; the pressure consequently having attained a second minimum at or near the hour of the greatest disproportion of temperature, again increases until the temperature and height of the column over the sea and land are the same, and the pressure again becomes stationary. But now the rarefraction of the column over the land continuing its increase in height above the less heated column with which it is in juxtaposition, and

its consequent overflow, occasion the pressure to decrease until the minimum at four o'clock.

We have thus, therefore, at Bombay, a double progression of the diurnal variation of the gaseous pressure; the principal minimum occurring at four o'clock in the afternoon, occasioned by an overflow from the column in the higher regions of the atmosphere; and the second minimum occurring at 18^h, occasioned by an efflux from the lower part of the column: the first minimum is similar to that which has been shewn to take place at Toronto, Prague, and Greenwich, and similarly explained; the second minimum, which does not take place at the three above-named stations, is owing to the juxtaposition of the columns of air over the sea and land, which differ in temperature, and therefore in density and height, in consequence of their resting respectively on surfaces which are differently affected by heat.

The mean range of the diurnal variation of the temperature in the clear season is 7.8°, and in the clouded season 3·7°; of the gaseous pressure $0\,196^{in}$. in the clear, and $0{\cdot}082^{in}$. in the clouded, season; the mean diurnal range both of temperature and of pressure in the clear season is therefore more than twice as great in the clouded season, affording a further illustration of the connexion subsisting between the variations of temperature and of pressure.

It does not appear necessary to dwell on the dependence of the diurnal variation in the elastic force of the vapour on that of the temperature. The dependence is an obvious one, and the facts are correspondent.

If, then, the explanation which I have offered to the section of the physical causes which produce the diurnal variation of the gaseous pressure at Bombay be correct, the diurnal variation of the Barometric pressure is also explained, since it is simply the combination of the two elastic forces of the air and of the vapour.

The solution of the problem of the diurnal variation of the barometer is therefore obtained by the resolution of the barometric pressure into its constituent pressures of vapour and air, since the physical cause of the diurnal variation of its component pressures have been respectively traced to the variations of temperature produced in the twenty-four hours by the earth's revolution on its axis, and to the different properties possessed by the material bodies at the surface of the globe in respect to the reception, conveyance, and radiation of heat.

Annual variation.—If we now proceed to the annual variations, which are shewn in the subjoined table, we perceive that the leading features of the

phenomena are clearly analogous to those which have been shewn to present themselves at Toronto, Prague, and Greenwich; viz. a correspondence of the maximum of vapour-pressure and a minimum of gaseous pressure with the maximum of temperature; and of the minimum of vapour-pressure and maximum of gaseous pressure with the minimum of temperature; and a progressive march of the three variations from the minimum to the maximum, and back to the minimum again. The epochs, or turning points, of the respective phenomena are not in every case strictly identical; but their connexion, which is the subject immediately before us, is most obvious.

We have thus a further illustration of the universality of the principle of the dependence of the regular periodical variations, annual as well as diurnal, of the pressure of the dry air and of the vapour on those of the temperature.

1843.	Temperature.	Vapour Pressure.	Gaseous Pressure.	Barometer.	Humidity.	Monthly Means greater (+) or less (—) than the Annual Means.		
						Temperature.	Vapour Pressure.	Gaseous Pressure.
	Deg.	Deg.	Inch.	Inch.		Deg.	Inch.	Inch.
January	76·4*	0·578*	29·352	29·930	67	—4·7	—0·202	+0·329
February	77·7	0·648	29·246	29·894	71	—3·4	—0·132	+0·223
March	79·7	0·710	29·128	29·838	74	—1·4	—0·070	+0·105
April	84·2	0·853	28·961	29·814	76	+3·1	+0·073	—0·062
May	85·9†	0·921	28·743	29·664	78	+4·8	+0·141	—0·280
June	85·4	0·935†	28·718*	29·653	80	+4·3	+0·155	—0·305
July	82·1	0·896	28·737	29·633*	85	+1·0	+0·116	—0·286
August	81·2	0·859	28·869	29·728	84	+0·1	+0·079	—0·154
September	81·1	0·859	28·920	29·779	84	0·0	+0·079	—0·103
October	82·2	0·819	29·026	29·845	78	+1·1	+0·039	+0·033
November	80·5	0·675	29·213	29·888	67	—0·6	—0·105	+0·190
December	76·6	0·592	29.368†	29·960†	67	—4·5	—0·188	+0·345
Mean....	81.1	0.780	29.023	29·803	76			

The humidity exhibits also a single progression; but may, perhaps, be rather characterized as evidencing a very dry season from November to February, and a very humid one from June to September, the latter season being that of the rains.

The average degree of humidity in the year is very slightly lower than either at Toronto or at Greenwich, but is still closely approaching to a value expressing the pressure of three-fourths of the quantity of vapour required for saturation.

The mean gaseous pressure in 1843, derived from the two-hourly ob-

* Signifies 'minimum.' † Signifies 'maximum.'

servations, appears to have been 29·02+30·025 (an index correction which Dr. Buist gives as that of the barometer with which the observations were made)=29·048 English inches. The height above the sea is thirty-five feet, and the latitude 19° N.

The mean height of the barometer in the year 1843, derived from observations at every second hour, appears to have been 29·803; the elevation being thirty-five feet above the sea. This is less than what is generally received as the average height of the barometer in the same latitude. From the careful comparison described in Dr. Buist's report as having been made of the standard barometer with several other barometers, there seems great reason to believe that the mean height shewn by it must be a near approximation to the true mean atmospheric pressure in the year 1843 at Bombay.

The mean height of the barometer in the four clouded months of May, June, July, and August, is 29·667; and in the four clear months of November, December, January, and February, 29·921. The mean vapour-pressure in the same seasons is respectively 0·904 and 0·622, and the gaseous pressure consequently 28·760 and 29·298. There is, therefore, a difference of 0·535 of gaseous pressure in these two seasons, and there is also a mean difference of temperature of 5.84° degrees. The lowest pressure corresponds to the highest temperature, and *vice versa:* if we may allow ourselves to make a rough proportion drawn in a single case, we may estimate a decrement of 0·1 inch of pressure to an increment of 1 Fahren-heit. The highest temperature and lowest pressure is accompanied for nearly the whole of its period by the S. W. monsoon, or a wind blowing from the sea. The lowest temperature and the highest pressure is accompanied by the N. E. monsoon, or a wind from the land. The difference of the gaseous pressure in the two seasons is partially marked in the barometer by an opposite difference in the tension of the vapour, so that the barometric difference between the two seasons, though still distinctly manifest, is less than the difference of gaseous pressure.

The analogy of the annual and diurnal variations, considered in respect to the explanation which has been attempted of the latter, is too obvious to be dwelt upon. The decreased gaseous pressure in the hot season is occasioned by the rarefaction of the air over the land whilst the sun is in the northern signs, and its consequent overflow in the higher regions, producing a return-current in the lower strata; and the increased pressure in the cold season is occasioned by the cooling and condensation of the air whilst the sun is on the south side of the equinoctial, and its consequent reception of the overflow in the upper strata from the regions

which are then more powerfully warmed, and which is but partially counteracted by the opposite current in the lower strata.

In concluding this communication, I beg respectfully to submit to the consideration of the eminent meteorologists here present, that it is very important towards the progress of this science, that the propriety (in such discussions as the present) of separating the effect of the two elastic forces which unite in forming the barometric pressure should be either admitted or rejected. The very remarkable fact recently brought to our notice by Sir James Ross, as one of the results of his memorable voyage, that the mean height of the barometer is nearly an inch less in the latitude of 75° S. than in the tropics, presses the consideration of this point upon our notice; for it is either explained by the diminution of the vapour constituent in the higher latitudes, which diminution appears very nearly to correspond to the decrease of barometric pressure observed by Sir James Ross, or it is a fact unexplained, and I believe hitherto unattempted to be explained, on any other hypothesis, of so startling a character as to call for immediate attention.

Second Supplement to the Catalogue of the Birds of Southern India, by T. C. JERDON, ESQ.

Madras Medical Establishment.

A considerable addition to the Ornithological Fauna of Southern India, and a few important corrections form the present article. Those species which are introduced here for the first time as inhabitants of the Peninsula, are marked with an asterisk.

* No. 1. bis—*Vultur Indicus,* Scopoli and Latham—not of Sykes', nor of Jerdon's Catalogue—*V. tenuirostris,* Hodgson.

This large species has been hitherto overlooked by me. Mr. Blyth appears to think that *V. Indicus* Temm. is a synonym of *V. fulvus,* to which he now refers my *V. Indicus,* and that *V. Imperialis* T. is a synonym of the present bird. From the dimensions however assigned to *V. Imperialis,* viz. 40 inches (French measure) I am inclined to believe that Temminck's *Indicus* refers to the same bird as that of Scopoli

and Latham, and that *Imperialis* is either a synonym of *fulvus*, or a new species to which Sykes' and my bird must be referred.

Cat. No. 6.—*Pandion lineatus* is the young state of *Haliœtus Macei.*

Cat. No. 9.—*Aquila chrysaetos* turns out to be *A. imperialis*—identified as such by Sir W. Jardine, to whom I sent a specimen.

No. 10. Cat.—*A. bifasciata*—a distinct species abounding towards Arracan, and the N. E. portion of Bengal.

No. 11. Cat.—*A. Vindhiana*—Some time ago I suggested the probability that this was the European *A. nœvia*, and Mr. Blyth has ascertained that it is so.

No. 12. Cat.—*Nisaetus niveus*—This is not the *niveus*, but the *N. grandis* of Hodgson, now considered to be identical with *Aquila Bonelli* of Europe.

12 ter, Sup. Cat.—The Neilgherry Black Eagle was described by Hodgson in the Journal of Asiatic Society as *A. pernigra*, and when I described it I had not then access to the volume containing this account. Some time afterwards I sent specimens to the Asiatic Society of Calcutta under the generic name *Ictinaetus*, intending to have given its character at an early opportunity. Mr. Hodgson however had again forestalled me, having sent a paper to the Asiatic Society in which he proposed the name of *Heteropus*. But as this name has been previously (twice indeed) employed in Zoology, perhaps Mr. Hodgson will adopt the name here suggested. Mr. Gray in his list of Raptores in the British Museum makes this fine eagle synonymous with *Falco Malaiensis*, Reinwardt, *Aquila Malayana*, Cuvier.

* 15 bis—*Baza lophotes*, *Falco lophotes*, T. *Baza Syama*, Hodgs., *Lophotes Indicus*, Lesson and Swainson.

I shot a single specimen of this curious bird in a grove at Davroypilly in the Nellore district, near the range of Eastern ghauts. It is rather an unexpected addition to the Fauna of Southern India, though not very uncommon in Bengal.

No. 16. Cat.—The common Kite of India is now supposed to be the European *Milvus ater.*

Cat. No. 20.—This small eagle is now considered to be the European *Aquila Pennata.*

No. 20. bis.—Suppl. Cat.—My *Spizaetus punctatus* is considered by Mr. Blyth to be the young of S. *hastatus,* Lesson, and is an aberrant species of *Aquila.*

No. 21. ter.—Suppl. Cat.—This is, as I suspected, the *Buteo albidus* of French authors, and I have identified it as the young state of *Hæmatornis undulatus* of Vigors.

No. 23. Cat.—Common Indian Harrier. This is the *Circus Swainsonii* of A. Smith, found both in Africa, and the East of Europe, as well as in India.

No. 29. Cat.—My *Falco Shaheen* has been previously named, it appears, by Sundevall, a Swedish Naturalist, as *Falco peregrinator*—F. *Aldrovandi* T. is a very distinct, much smaller, species.

* No. 30. bis.—*Falco vespertinus.*—I shot a single specimen of the Red-legged Falcon of Europe on the Neilgherries in January, 1840, and have seen another killed at Nellore. Mr. Blyth has also obtained it at Calcutta, and it is not very uncommon on the Himalayas.

No. 32. Cat.—The prior name for the Shikra is *Accipiter badius.*—It is also *F. Dussumierii* T.

No. 34. Cat.—*Accipiter besra.*—The bird described at No. 35 is an adult *Besra*—it is most probably the *A. Dussumierii*

of Sykes' Cat.—Mr. Strickland writes me that he considers it to be the young state of *A. virgatus* of Temminck, but I am convinced that this is a mistake.

No. 38. Cat.—*Strix longimembris* is probably the *S. candida,* of Tickell.

No. 40. Cat.—Is the *Noctua hirsuta,* Tem., and *Ninox nepalensis* of Hodgson.

* No. 41. bis.—*Urrua cinerea* Blyth—perhaps *Scops coromandus* of the older authors. I have procured specimens of this fine owl near Nellore.

No. 42. bis—Sup. Cat.—*Bulaca monticola*—This is the *B. newarensis* of Hodgson.

No. 43. Cat.—*Scops Javanicus.*

From information received by me lately from Mr. Blyth it appears probable that the Scops Owl of Malabar and the West Coast may yet prove distinct from the Malayan *S. lempigi,* though it is certainly very closely allied. Should it prove so, I would propose the name of *malabaricus.*

* 43 bis—*Scops pennata*—Hodgson. The first specimen I saw of this pretty little owl was one found dead close to a house I then occupied in Madras. Mr. Ward afterwards sent me a specimen from the West Coast, and I have since obtained it from the forests of the Eastern Ghauts. It varies remarkably in its plumage, one state being so extremely similar to the *Scops sunia* of Hodgson, that I at one time considered it identical. Mr. Blyth however informs me that he considers them distinct.

Dimensions.—Length about $7\frac{1}{2}$ inches, wing $5\frac{3}{10}$, Tail $2\frac{4}{10}$, Tarsus $\frac{8}{10}$ths.

* 43 ter—*Scops griseus*—new species? *S. lettia,* Hodgson, var.

I have procured several specimens of a rather large Scops Owl from the forests of the Eastern Ghauts, which very closely resembles that named *lettia* by Hodgson, but which is smaller and differs otherwise according to Mr. Blyth. I add a brief description. General tone of plumage, light cinereous grey, more or less tinted in parts with fulvous, and mottled, marbled, and streaked with various shades of brown—under plumage very light—the feathers centred dark—feathers of the tarsus creamy white. The Malabar Scops Owl, which nearly approaches it in size, differs in the prevalence of a strong rufous tinge, more especially in the plumage beneath. I have now seen many specimens from the Eastern Ghauts, none of which have any tendency to that marked rufous hue.

Length 10 inches, wing about 6, Tail 3.

No. 46. Cat.—The *Noctua cuculoides* of my Catalogue is quite distinct from the Himalayan bird, and is the *Noctua radiata* (Tickell,) *N. perlineata,* Hodgson.

* No. 46. bis—*N. spadicea* (T), *S. castanoptera,* Horsf.

The Southern provinces of India and Ceylon appear to possess a distinct species which from its prevalent rufous hue appears to be the species mentioned above. I have procured it from Travancore and the southern provinces of Malabar, and Mr. Blyth has seen specimens from Ceylon.

*No. 51. bis.—*Lanius cristatus* L., after Edw, pl. 54.—*L. melanotis* Val.—*L. ferrugiceps,* Hodgson. I had overlooked this Shrike as the young of *L. Hardwickii,* but Mr. Blyth pointed out to me that it was quite distinct, and identified it as above. Common throughout the peninsula, frequenting low jungle, gardens, and hedgerows. It is also *L. phœnicurus,* Pallas-apud Latham.—*L. superciliosus.* var. A., Lath.

No. 54.—The common Indian Swallow Shrike is the *Ocypterus rufiventer* of authors.

No. 55.—It appears that the common King Crow of India will stand as *Dicrurus macrocercus,* Vieillot.—It is also *D. Indicus* Stephens, and *D. albirictus* Hodgson, &c.

No. 57.—If the name *Macrocercus* be rightly applied as above, then my bird will require a new name, and Lord Arthur Hay has, in a Monograph of the *Dicruridœ,* given it the title of *longicaudatus.*

*No. 59. bis.—I have lately procured several specimens of a racket-tailed Drongo from the jungles of the Eastern Ghauts, which appear to differ decidedly from the Malabar bird. As Lord Arthur Hay has been engaged in examining this family I gave specimens to him, and he distinguishes this species by the name of *Edolius dentirostris.*

*No. 59. ter.—*Edolius orissœ.*—Specimens of the racket-tailed Drongo, procured by Lord Arthur Hay from the jungles of Goomsoor, appear also to differ specifically from the other known species, and that gentleman has applied the above name to this one.

For ample details respecting the differences of these and the other species, vide the Monograph of this family by Lord Arthur Hay, in the present* number of this Journal.

*No. 58. bis.—*Dicrurus criniger* (T.), *Corvus hottentotus* L., —*Ed. Chrishna,* Gould. *Chibia casiá,* Hodgson. *Criniger splendidus,* Tickell. *Hair-crested Drongo.*

Captain Roberts of the 36th M. N. I. obtained this handsome species in Coorg many years ago, a fact which he communicated to the then Editor of this Journal, some time after the publication of my Catalogue. Lieut. Blake of the same Regiment also informed me that he had shot it in that locality. I have quite recently obtained a specimen from the Eastern Ghauts. It must however be very rare in Southern

* The departure of this gentleman for Calcutta has delayed the appearance of this article.

India, as I have never seen a specimen among the numerous collections from the West Coast which I have examined. It appears to be not uncommon about Calcutta.

No. 60.—*Ceblepyris papuensis*—It appears doubtful if this be the true *papuensis*—if not, it is perhaps the *Graucalus Macei* of Lesson.

No. 61.—My bird turning out to be distinct from *Ceblepyris fimbriatus*, will stand as *C. Sykesii*, Strickland.

*No. 61. bis.—The *Ceblepyris melaschistos* (Hodgson), *Lanius silens* Tickell, has been obtained from Goomsoor.*

*No. 65. bis.—*Phœnicornis roseus. Muscicapa rosea* V. *Phœnic. rubritinctus*, Blyth. I had overlooked this bird as the young of *P. flammeus*, till Mr. Blyth pointed out its peculiarities. It is found in the forests of the West Coast, though but sparingly, and appears more common about Calcutta.

*No. 69. bis.—*Brachypus xantholœmus*—new species—Yellow throated Bulbul—*Konda Poda pigli* Tel—i. e. Hill bush Bulbul.

I have recently obtained specimens of this well marked species of *Brachypus* (hodie *Pycnonotus*) from the denser portions of the forests of the Eastern Ghauts, to which it at present appears confined, as I have not seen specimens from any other part of the country. Description—Head, face and neck, yellowish green, chin and throat pure yellow—upper plumage gray with a slight tinge of green here and there, most marked on the upper tail coverts; wings dusky, edged with yellow green, which gives that tinge to the whole wing when closed—Tail dusky, the feathers edged with yellow green, and except the centre ones tipped with white—breast gray, paling to whitish on the lower part of the abdomen : under tail coverts pure yellow. Bill and legs black—length

* Since writing the above, Mr. Blyth informs me that Mr. Strickland considers this bird to be the true *C. fimbriatus* of Temminck.

about 8 inches—wing $3\frac{6}{10}$—tail $3\frac{6}{10}$—bill at front $\frac{6}{10}$—tarsus $\frac{8}{10}$ths—Irides said to be red—(I have not as yet seen fresh specimens myself.)

No. 69.—It is possible that this bird may be the *Brachypus gularis* of Gould, P. Z. S. 1835, from Travancore, as it agrees with the description except as to the throat, the color of which however may have been accidentally omitted, as the specific name is derived therefrom.

No. 71.—This must be the *Chloropsis malabaricus* auct, the true *aurifrons* not being found in the peninsula.

No. 72.—Mr. Blyth considering that the specimens I had sent him of this *Chloropsis* did not agree exactly with the description of *Cochinsinensis,* proposed the specific name of *Jerdoni.* Mr. Strickland however appears to think that I had rightly identified it. On a minute examination of the descriptions in Latham, and other authors, I am by no means certified of the correctness of this application, and as notwithstanding the labours of Sir W. Jardine and other naturalists, considerable confusion appears to exist among the species of the interesting group, I shall here add the result of my investigations.

1. *Chloropsis aurifrons—C. malabaricus,* apud Jard. and Selby—s. pl. 5, Ill. Orn., afterwards corrected in Synopsis of species in the 2d vol. s. pl. 100—*Hurruwa Bee Eater,* Lath, but not var. A., which appears to be the next species—*Phyllornis aurifrons* T. P. C. 484. 1—not *C. aurifrons* apud Jerdon, Catal. Not found in Southern India.

2. *Chl. malabaricus* (Lath)—*yellow fronted Thrush*—do. No. 50—*Hurruwa Bee Eater, var. A.,* not *malabaricus* of Jardine and Selby, Synopsis, nor of Blyth J. A. S., nor of Eyton P. Z. S.—*C. aurifrons* apud Jerdon, Cat. No. 71—*C. cæsmarhynchos* (misprint for *gampsorhynchos*) apud Tickell and Blyth J. A. S.

This species is I think clearly enough intended by Latham. —The name yellow fronted Thrush is only applicable to *aurifrons*, and the present species, and the fact of Sir W. Jardine having formerly applied this name to the *aurifrons*, shows how nearly allied the species are—Latham however recognised the distinctions, though he has, like later authorities (whom perhaps he has been the means of misleading) mixed up and confounded it with our next species,—whose female he describes (though imperfectly) as the female of *malabaricus*. Moreover under his black chinned honey eater, *Turdus cochinsinensis* of the Ind. Orn., as var. A., he describes well enough the female of our next species, giving also as synonyms his *Turdus malabaricus*.—As however he has accurately enough described our present bird under *malabaricus*, I have no hesitation in thus applying that name. I have no access to Sonnerat's description of his 'Petit Merle de la cote de Malabar' which Latham gives as a synonym, and indeed from which I imagine Latham drew his account. Its chief habitat is certainly the forests of the Malabar coasts, extending though sparingly, and only in suitable localities, into central India.

It is very rare in the jungles of the Eastern Ghauts, whilst the next bird is abundant.

3. *C. Jerdoni* Blyth—*C. cochinsinensis* apud Jerdon, Cat. No. 72—not the *cochinsinensis* of Latham—*C. Malabaricus* apud Jardine and Selby—not of Temminck P. C. 512.2, nor apud Blyth J. A. S. p. 957.—Female described by Latham as fem. of his *Turdus Malabaricus*, and as var A., of his black chinned honey eater, *Turdus cochinsinensis*. Although the description by Latham of his *Turdus cochinsinensis* agrees somewhat with our present subject, yet from various discrepancies, from the locality, and still more from an inspection of the figure in the P. E. 643.3, from which apparently this description was taken, I am inclined to believe that this, the *chloropsis* of Southern India, is perfectly distinct from the

cochinsinensis of Latham, the Verdin de la cochinchine of Buffon, and that Mr. Blyth's name will stand good. It is dispersed over all the southern part of India, but I have as yet seen no specimens from any of the Malay countries, nor has Mr. Blyth procured it elsewhere.

4. *C. Cochinsinensis* [Lath.] Jardine and Selby, and others, *C. Malabaricus* apud Blyth, J. A. S., and Eyton, P. Z. S.—*Phyllornis Malabaricus* Temm. P. C.—*C. mystacalis* Sw.?? I have not seen this except it be identical with Swainson's *C. mystacalis*, a specimen of each sex of which, from Lord Arthur Hay's collection, is now before me. The male of *mystacalis* has however no trace of the azure patch at the bend of the wing, nor of any blue on the wings and tail, nor is the head yellowish. The female however corresponds with Mr. Blyth's description of his female *Malabaricus*. Nevertheless I shall consider them for the present distinct, till I have had an opportunity of examining other specimens. Hab. Malay countries.

5. *C. Sonneratii*, *Phyll. Mullerii* T., *Chl. Zosterops*. Jard. and Selby is fem. *Turdus viridis* Horsf. *C. gampsorhynchos* J. and S., young male. Mr. Blyth says, I know not on what authority, inhabits Southern India, and the Malay countries. I have never seen it nor heard of its having been found in Southern India.

6. *C. Hardwickii* J. and S., *C. curvirostris* Sw., *C. chrysogaster.*, M. and H., *C. auriventris*, Delessert—*C. cyanopterus*, Hodgs. Hab. Nepal, Assam, &c.

I was at one time inclined to think that the figure in the P. E. 643.3 was taken from an immature male of this species.

7. *C. mystacalis*, Sw., if distinct from No. 4.*

* It is distinct, but is identified by Mr. Blyth with the next species.

8. *C. cyanopogon* T., if distinct from the last. The chief difference is that the black is described as occupying only the chin, whilst in *mystacalis* it occupies both chin and throat.—The *Meliphaga Javanica* of Horsfield is sometimes given as a synonym of *C. cochinsinensis,* but I believe of late it has been considered identical with *Turdus viridis,* and both referred to *C. Sonneratii.*

No. 73.—It appears that there are 3 species at least of *Jora.* Our southern species is *I. zeylanica, meliceps,* Horsf., quite distinct from *typhia* of Bengal, which again differs from *scapularis* of Malayana.

No. 74.—*Pycnonotus flavirictus* Strickl. It appears that this cannot be the *virescens* of Temminck, and some time ago I told Mr. Blyth that I intended giving this bird the specific appellation of *dumeticolus,* a name at once expressive of its habits, and a translation of its Teloogoo name, which signifies *Bush Bulbul,* but in the mean time Mr. Strickland had met with it in London, and given it the excellent name mentioned above.

No. 75. Cat.—Mr. Strickland considering this bird distinct from the *Turdus indicus* of older authors, has named it *Criniger* (the modern name for Trichophorus) *ictericus.*

No. 76. Cat.—The common Bulbul of the South of India is the *muscicapa hæmorrhousa* of the old authors, which specific name will accordingly hold good.—It is very distinct from the *B. cafer* of Bengal, and Mr. Blyth on comparing them first called this species *pusillus.*—That gentleman has informed me of the present bird being found in Arracan, which shows a truly remarkable geographical distribution.

No. 78.—Mr. Blyth refers this bird to his new genus *Alcippe,* vide J. A. S.

No. 80.—*Pitta brachyura*—This bird will now stand as *P. superciliaris,* Wagler.

* No. 83. bis.—*Turdus nigropileus* La-fresnaye—This bird is nearly allied to, though quite distinct from, the Neilgherry black-bird—I have found it, though very rare, and only an occasional visitant, to various parts of the country, but it appears most abundant in the Malabar forest. I have obtained it myself both at Jalnah, and at Nellore, in gardens, and found it feeding on a species of helix.

Length—$9\frac{1}{2}$—W 5—T $3\frac{3}{10}$ Tars—$1\frac{3}{10}$—bill (front) $\frac{9}{10}$ths.

No. 85.—This species of Thrush is now considered to be the *Turdus whitei,* but Mr. Strickland has identified it as the *T. duama* of Latham, which name will accordingly hold good.

* No. 84. bis.—*Turdus Wardii*—Jerdon, Illust. Ind. Ornith. pl. viii.

Since my account of this peculiarly marked Thrush in my Illustrations of Indian Ornithology, I have met with it at Nellore. Lord Arthur Hay also obtained a specimen at the foot of the Neilgherries. Mr. Blyth informs me that Mr. Hodgson had also sent it to the Calcutta museum under the MSS. name of *T. micropus.*—I think it is probably the *Darunga* Thrush of Latham, No. 32.

No. 86.—This species is now generally considered to be the *Pellorneum ruficeps* of Swainson. Mr. Blyth considers it to be identical with the *Cinclidia punctata* of Gould, and the *Hemipteron nepalense* of Hodgson. Mr. Strickland has also identified it with Sykes' *Megalurus ruficeps.*

No. 91.—In my Illustrations of Indian Ornithology, I have separated the species found in the Malabar forests from Col. Sykes' *Somervillei,* under the name of *Malabaricus.*

* No. 91. bis—*Malacocircus orientalis,* new species. In the same place I have pointed out what I consider to be a new species from the jungles of the Eastern Coast of India, and given it the above name.

* No. 91. ter.—Should Sykes' species *T. Somervillei* really prove distinct from my *Malabaricus,* it will form another addition to my catalogue.

* No. 92. bis.—*Malacocircus affinis,* new species.

The peculiarities of this species and its distinction from the common *M. griseus* of the Carnatic I have also pointed out in my article on *M. griseus,* pl. xix. of my Illustrations. It is from Travancore.

No. 97.—*Oriolus kundoo* Sykes.

No. 99.—I have named and figured the peninsular representative of *O. chinensis* in my Illustrations, pl. xv., with the title of *O. Indicus.*

No. 106.—Mr. Blyth identifies Sykes' *Saxicola rubeculoides,* as the *Muscicapa leucura* of Latham and Swainson.

No. 113.—This bird has been identified by Blyth as the *Turdus arundinaceus* of Linnæus, the *Sylvia turdoides* of Temminck, and it belongs to the genus *Acrocephalus.*

No. 88. bis—Suppl. Cat.—The doubtfully cited *Megalurus,* to which I gave the specific name of *striatus,* was obtained by Mr. Blyth at Calcutta, who rightly referred it to its proper genus *Dasyornis,* and called it *locustelloides.* The name *Sphenura* taking priority of *Dasyornis,* the bird will now stand as *Sphenura striata.*

No. 96. bis.—Suppl.—An allied species which I named in the first Supplement to my Catalogue, *Thimalia platyura,*

was at first referred by Mr. Blyth to the same group as the last, but he has since proposed for it a new genus, *Schœnicola*.

*No. 113 bis.—*Phragamaticola olivacea,* Blyth, new species.

I procured at Nellore among some high reeds a species so similar in size and colouring to *Acrocephalus arundinaceus,* that without further examination I referred it to that species, and it was only on looking over my specimens of that bird, that I recognised its peculiarities. I forwarded it to Mr. Blyth, being myself doubtful where to locate it, and that gentleman has made of it a new genus to which he has given the above name, and will shortly fully describe its peculiarities. It is somewhat allied to *Sphenura,* especially in its habits, but differs in its wider and more depressed bill, and varies in other points. Its plumage, as I have before mentioned, is almost identical with that of the European Reed Thrush.

Length $7\frac{1}{2}$ to 8 inches, W. 3, T. $3\frac{1}{2}$, Tars. $1\frac{1}{4}$, Bill (front) $\frac{6}{10}$ths.

No. 95 bis.—Suppl. Cat.—Mr. Blyth first referred my *Thimalia poioicephala* to his genus *Trichastoma,* which has since been identified by Strickland with *Malacopteron* of Eyton, but he has since, I believe, referred it to his new genus *Alcippe.*

No. 109 bis.—Suppl. Cat.—*Phœnicura major.*—I am now inclined to class this bird as a *Calliope,* but Mr. Blyth proposes for it a new genus which he will shortly define.

No. 109 ter.—My *Phœnicura superciliaris* was previously named by Hodgson *Larvivora cyanea.* Mr. Blyth agrees with me in considering that it comes under *Calliope,* and it will now therefore stand as *Calliope cyanea.*

No. 115.—*Orthotomus lingoo,* Sykes', is to be cancelled, being only the young of *O. Bennettii,* as has been ascertained by Strickland from Col. Sykes' own specimens.

No. 117—*Prinia gracilis.*—This name has been changed

by Mr. Blyth to *P. Hodgsonii,* the name being forestalled for a species from northern Africa delineated by Rüppell.

No. 119—*P. macroura* of Franklin has been called *Franklinii* by Blyth, that name being previously occupied. It is however perhaps the *Sylvia longicaudata* of Tickell.

No. 121—*P. rufifrons.*—This name, also forestalled by Rüppell, has been changed by Mr. Blyth to *P. Buchanani.*

* No. 121 bis.—*P. neglecta*—new species.—Some time ago I sent to Mr. Blyth a specimen of a species of *Prinia,* which I thought distinct, and which that gentleman named *P. Jerdoni,* but afterwards considered it merely as a variety of *P. inornata*. On examining carefully all the specimens of *Prinia* in my collection, I find one species decidedly distinct, and not being certain that it is the same as the one sent to Mr. Blyth, have here named it as new. I add a brief description.

Size nearly that of *Sylvatica*—Bill shorter, deeper. Plumage above similar to that of *Sylvatica,* viz. a greenish ashy brown, but with a decided tinge of rufous throughout; beneath whitish, strongly tinctured with fulvous—Tail very faintly barred.

Length about 6 inches, W. $2\frac{3}{10}$, T. $2\frac{1}{10}$, Tars. $\frac{9}{10}$, Bill (front) $\frac{4}{10}$ths.

I procured it from the jungle skirting the base of the Eastern Ghauts.

No. 123—*Sylvia montana.*—Mr. Strickland having examined specimens sent him by me, considers this bird to be the same as the European *S. (acrocephalus) arundinacea,* or the lesser reed bird. It is certainly migratory in the south of India. Col. Sykes' *montana* is identical with mine so called, but both are very distinct from Horsfield's *S. montana.*

No. 124—*S. rama,* Sykes.—This Mr. Blyth looks on as an aberrant species of *Phyllopneuste.*

124 bis.—*Sylvia (acrocephalus) agricola,* new species.

Descr.—Plumage above pale rufous brown—beneath whitish tinged with fulvous—Length about 5½ inches, W. $2\frac{3}{10}$, T. $2\frac{3}{10}$, Tars. $\frac{9}{10}$, Bill (front) $\frac{4}{10}$ths.

I found this species of warbler frequenting rice fields in the neighbourhood of Nellore during the cold weather. Mr. Blyth informs me that he has found it very abundant in reedy ground near Calcutta. It approaches somewhat the descriptions of *S. palustris* of Europe.

No. 125.—The *Sylvia trochilus* of my Catalogue has been named *Phylloscopus tristis* by Mr. Blyth, who has found it near Calcutta.

No. 126.—The doubtfully named *S. hippolais* of my Catalogue has been named *Phylloscopus lugubris* by Blyth.

No. 127.—This is probably the *M. affinis* of Tickell.

* No. 125 bis.—*Phyllopneuste occipitalis,* Blyth, new species. I sent a specimen to Mr. Blyth of a bird obtained by me at Nellore in the cold weather, very like the *P. reguloides* of that naturalist, but sufficiently distinct for him to characterize it as above.

* No. 126 bis.—*Phylloscopus nitidus*—Bl.—probably *Muscicapa nitida* of Latham and Franklin. I have also obtained this bird at Nellore.

* No. 127 bis.—*Phyllopneuste Indica,* Blyth, new species. I obtained a specimen of a warbler nearly allied, according to Mr. Blyth, to the *Sylvia hippolais* of Temminck, and which that gentleman will shortly describe under the above name. He obtained another specimen from Mr. Hodgson.

* No. 129 bis.—*Parus nuchalis,* new species—white naped Titmouse.

Descr.—A wide nuchal mark, streak from gape, cheeks, ears, sides of neck, of breast and abdomen, two external tail feathers on each side, outer barb of the next, and tip of the others, a bar on the primaries, and outer edge and tips of the

tertiaries, white—the rest of the body glossy black, except the under tail coverts, which are mixed black and white. Bill and legs black—Length about 5 inches, of wing $2\frac{6}{10}$, Tail 2, Tars. $\frac{7}{10}$, Bill (front) $\frac{4}{10}$ths.

I obtained this interesting addition to the Fauna of Southern India from the range of Eastern Ghauts.

No. 133—*Parisoma vireoides.*—I have for some time considered this curious bird to be the *Fringilla agilis* of Tickell, but have only lately procured another specimen to forward to Mr. Blyth, and who has formed of it a new genus, *Piprisoma,* and allies it to the Dicœum group, to the slender billed, sombre coloured species of which it bears much the same relation, that the genus *Prionochilus* of Strickland does to the slender billed, gaudy coloured species of Malaisia. The synonyms of this species are as follows: *Piprisoma agilis,* *Fringilla agilis* Tickell, *Pipra squalida,* Burton—*Parisoma vireoides,* Jerdon.

Nos. 135, 136, and 136 bis—probably all belong to the same bird, which must be referred, as I first pointed out, to *Motacilla viridis,* Auct, taken from Brown's Illustr. of Zoology. It is also (says Mr. Blyth) the *M. bistrigata* of Raffles.

No. 139.—The *Mot variegata* of Vieillot was named previously by Latham *M. Indica,* and Mr. Blyth has lately created a new genus for it by the name of *Nemoricola.*

No. 140.—The white wagtail of India is *Mot. luzoniensis,* Scopoli, since named *leucopsis* by Gould, and *alboides* by Hodgson.

* No. 144 bis.—The species which I mention under the name of *fuscoventris* as having been seen, but not obtained by me at the Neilgherries, proves to be a new species, which I have named *Leucocirca pectoralis.* Vide my Illustr. Ind. Ornith. pl. ii.

Nos. 146 and 147.—The red bird is only the immature one of the white—vide Illustr. Ind. Ornith. pl. vii.

* No. 150 bis.—*Muscicapa (Cyornis) Tickelliæ* Blyth—*M. hyacinthina* T. apud Tickell.

As it is probable that most of Tickell's species will be found within the limits of my district, I shall here include such of his birds as have been authenticated, and this among the number.

No. 154 bis.—Suppl. Cat.—*M. rubecula* Sw. Mr. Blyth suggests that this may probably be the female of the preceding bird.

No. 125.—Sykes' *M. picata* is distinct from the Malayan bird, with which I had confounded it, but it will bear the prior name of *tyrannides*, Tickell. The *M. variegata* Auct. is perhaps the female of this bird.

No. 156—*Musc. Erythropygia.*—This is probably a species of *Phœnicornis* (vel *Pericrocotus*) as suggested by Mr. Blyth. I find it described, and a figure of the male given by Latham, as the *Cawnpore Flycatcher*, No. 30 G. H.

No. 161.—The *Pica Sinensis* is a doubtful native of the Peninsula; I have never obtained it; and as the collection in which I saw it named as from the Eastern Ghauts, included specimens from other parts of the country, I shall in future exclude it from the Peninsular Fauna.

No. 166.—This bird described under the name of *Pastor Malabaricus* in my Catalogue being considered new, I gave a figure of it in my Illustrations under the name of *P. Blythii.*

* No. 166 bis.—*P. Malabaricus* verus.—The gray headed Myna alluded to in my account of the last bird, as a cold weather visitant to the peninsula, is now considered to be the real *Malabaricus.* It is abundant in Bengal.

No. 168.—The hill Myna of Southern India is quite distinct from that of Bengal, which again differs much from that of Malayana. Mr. Blyth who had only seen the two forms, considered the Bengal one as true *religiosa,* vel *Javanus* Cuv., and

the one from S. India as *Indica, (Eulabus Indicus Cuv.)* In Lord Arthur Hay's collection are specimens of each, and he names the Southern one *religiosa,* the Bengal one *Indica,* and the Malayan one *Javanus,* to avoid the inconvenience of a new name, but I imagine if any of the three species require a new name it will be that of Southern India, and I would suggest the name of *G. minor.*

No. 169.—It is probable that our common weaver bird differs from the *E. Philippensis,* and Mr. Blyth has suggested for it the name of *E. Baya.*

No. 170.—The Brahminee Baya, which I referred in my Catalogue to *E. Bengalensis,* being found distinct from that species, both of which are abundant in Bengal, gave it the name of *striatus;* but Mr. Strickland has ascertained that it is identical with the species named *Manyar* by Horsfield, whose name will therefore stand. It is also *E. flaviceps* of Swainson.

Nos. 172 and 173.—These two species will stand as *punctularia,* and *striata,* names which, I believe, I was the first to point out as prior appellations to those given by Temminck.

No. 175.—*S. cheet* (Sykes.)—This little Finch is undoubtedly the *Loxia Malabarica* of the older authors, as was pointed out by Mr. Blyth.

No. 177.—The name *flavicollis* was first given by Tickell, not by Franklin.

No. 178—*Pyrgita concolor.*—Mr. Blyth considers it possible that the *Emberiza olivacea* of Tickell may refer to this bird, which I have never again met with.

* No. 179 bis.—*Emberiza icterica* Eversm. apud Gray—*E. luteola,* Lath., apud Blyth—*E. guddak* Buch Ham.

This handsome species of Bunting, which I learn from Mr. Blyth has been figured by Gray, is, I find on reference to Mr.

Elliot's notes, the species named *Gundum* by him, which I had confounded with the *E. melanocephala,* so abundant in the north of the Deccan, and there called *Gundum.* I have procured this bird from the Cuddapah district during the cold weather, and Mr. Blyth has obtained it from Central India. Mr. Elliot too found it abundant in Dharwar; but it appears to be very locally distributed, for I never myself obtained, or saw it, that I am aware of, among the thousands of *E. melanocephala* that yearly visit the corn fields about Jaulnah.

No. 180—*E. ortolana* Sykes' Cat.—I have not myself obtained this as yet, nor has Mr. Blyth, but he has seen a drawing of Buchanan's of an allied species, which he has named *E. Buchanani.*

No. 181—*E. cia.*—The doubtfully cited *cia* of my Catalogue is referred to *Emberiza fucata* Pallas, *E. lesbia* of Temminck; not of other authors.

Nos. 182 and 183—*E. cristata,* and *E. subcristata.*—These are but male and female of the same bird, which is now named *E. (Melophus) Lathami* Gray. It is also the *E. nipalensis* of Hodgson, and the *E. erythroptera* of Jardine and Selby. The bird named by Buffon, Le Moineau de Macao, figured Pl. Enl. 224, 1, appears to me to be the same bird, and if so it will bear the prior, but certainly inappropriate, name of *melanictera* Vieillot.

No. 185—*Alauda Chendoola.*—The Aggun of South India referred by me from a living specimen to Franklin's *chendoola,* is, I find on procuring specimens, a species of *Mirafra,* which I have called *cantillans,* under which name Mr. Blyth has described it in the Journal of the Asiatic Society, vol. 13, p. 960. It appears very locally distributed, but Mr. Blyth has obtained it near Calcutta.

No. 186—*Alauda deva*—Sykes.—The *Chandool* of South-

ern India. This bird very closely approaches the *Certhilauda chandoola* (Franklin) of Northern India, and I think should range with it in Certhilauda, though neither of them are typical species. Mr. Blyth considers it as possibly the *Al malabarica* of the older authors, but Mr. Strickland writes me, that he thinks this name applies to a species of *Mirafra* I sent home, and which I had called *M. affinis.*

No. 187.—This social lark, or Ortolan as it is usually called, has been placed as the type of a new genus by Mr. Blyth, and it will now bear the name of *Coryphidea baghaira.*

No. 189.—The *Mirafra Javanica,* of my catalogue, I have now reason to consider distinct, and have named it *M. Erythroptera.* It is described by Mr. Blyth in the Journal of the Asiatic Society, vol. 13, p. 958, and a figure of it will shortly appear in my Illustrations.

* No. 189 bis.—*Mirafra malabarica, M. affinis*—Jerdon—Blyth l. c.—This allied species is found spread over a large extent of country. I have seen specimens from Goomsoor. It is abundant in all the Carnatic, and also in Malabar, and in portions of the Table land. It is not found in the neighbourhood of Jaulnah. It abounds in every compound in Madras.

* No. 188 bis.—*Mirafra Hayii*—new species.—The first specimen I saw of this crested *Mirafra* was in the possession of Lord Arthur Hay, after whom I have named it—I have since procured it from Malabar, and from the Eastern Ghauts —vide Blyth's paper l. c.—for comparative descriptions of all these.

No. 190 *Anthus agilis.*—Mr. Strickland writes me that specimens I sent have, with this name, differed from Sykes' *agilis.* It appears to be the same as Eyton's *Anthus Malaayensis.*

* No. 190 bis.—*Anthus striolatus* Blyth.

I have procured several specimens of this Titlark in the neighbourhood of Nellore. Mr. Blyth obtained his specimen from Darjeeling.

No. 193 bis.—This species must be cancelled, it being identical with my *Pellorneum*, No. 86, as previously indicated.

No. 195.—This is now the *Erythrospiza erythrina* (Pall.), the name *rosea* of Vieillot being preoccupied, and L. Bonaparte's generic name being prior to *Hœmorrhous* of Swainson.

No. 197.—This the common Hornbill of Malabar must stand as *Buceros pica*, Scopoli,—whose names precede those of Latham. It is distinct from the Bengal bird, *B. albirostris*.

No. 198.—This species will stand now as *Buceros birostris* Scop.

* No. 205 bis.—*P. ceylonus* Forst. *P. neglectas*, Wagler.

Lord Arthur Hay brought from Ceylon a single specimen of this Woodpecker, which, it is highly probable, will be yet found in the southernmost portions of the peninsula.

No. 206—*P. (Hemicercus) cordatus.*—Mr. Blyth appears to think that the *Picus Canente* of Lesson is identical with my bird. A figure will appear in my Illustrations No. 3. Mr. Blyth has obtained it from Arracan.

No. 208—*P. Elliotti.*—Some time ago a pair, male and female, of a fine Woodpecker were sent to me by Lord Arthur Hay, which had been identified by Mr. Elliot, as the one described by me from his notes. The male has the crest fine red—but the description of the female was accurate enough when the punctuation is corrected; for it should be read "Cheeks black; spot from the eye," &c.—on seeing these birds I at once recognised a Woodpecker described by Mr. Blyth as *P. (Chrysocolaptes) melanotus*. On my arrival at Madras and comparing the descriptions of Latham and Shaw, together with the figure in Shaw copied from the Pl. Enl., I at once saw that this was the Goa Woodpecker of old authors, *P. Goensis*—and it will accordingly stand as *Chryso-*

colaptus Goensis. Wagler of course is in error in putting it as a synonym of *P. strictus.* I have of late obtained it at Nellore, inhabiting the densest portions of the jungles of the Eastern Ghauts.—Length 12 inches, W. 6, T. 3½, Bill (front) 2, Tars. 1.

No. 209.—*P. (Dendrocopus) Hardwickü*—new species—*P. moluccensis* apud Gray and Hardwicke—Jerdon—Blyth, &c.—On comparing specimens from Southern India with the original figure in P. E. pl. 748, 2, and finding moreover that there are several allied species in India much more like this Molucca bird, I am compelled to rename this species, and have accordingly named it after one of the most successful cultivators of Indian Zoology. It appears to be the Cawnpore Woodpecker, Latham, No. 19—the variety A. of his *P. moluccensis* being one of the allied Indian species.

No. 209 bis.—*P. (Dendrocopus) nanus* Vigors.

The dark variety alluded to in my catalogue was identified by me with a specimen of *P. nanus* from central India.

No. 210—*P. squamatus.*—The Himalayan Woodpecker figured by Gould is a much larger species than the one found in Southern India, which Mr. Blyth has named *P. striolatus,* J. A. S. vol. xii. p. 1000, where he also points out, that I have indicated another allied species which he has procured from Assam and named *viridanus.* Those that answer to his *P. striolatus,* I have obtained from the Malabar Coast, and the forests of the Eastern Ghauts.

* No. 210 bis.—*P. (Gecinus) viridanus* Blyth—l. c.—Mr. Blyth subsequently, J. A. S. page 191, says, *P. viridanus* would seem to be *P. dimidiatus* of the Dict. class, though not of Gray and Hardwicke.

No. 211—*P. Mentalis.*—The bird doubtfully referred by me to *P. mentalis* was considered by Mr. Blyth to be the *P. nepalensis* figured in Gray and Hardwicke, and he has since referred it to *P. chloropus* of the Dict. class, evidently

the same bird as the *P. chlorolophus* of Vieillot, Encycl. Meth., which name I presume will stand for the Bengal bird. This however differs so considerably from the allied species of Southern India, that I have no hesitation in considering them distinct—and accordingly bestow on our southern bird the appellation of *chlorigaster.* It differs from the Nepal bird in smaller size, less developed crest, darker abdomen, and various other points which I shall particularize in my Illustrations, for which I have prepared a figure of our southern bird.

* No. 212 bis.—*P. (Brachypternus) micropus* Blyth J. A. S.—vol. 14—194.—I procured a specimen, among a lot of *P. bengalensis,* which appeared to me to be smaller in all its proportions than that species, and sent it to Mr. Blyth, who has named it as above. It was obtained in the jungles of the Eastern Ghauts.

No. 214—*P. badius.*—Mr. Blyth has quite recently (J. A. S. 14. 195) separated the rufous Woodpecker obtained in the north of India from the nearly allied Malayan bird, by the name of *P. (micropternus) phaioceps.* I am not very certain if the South Indian bird be identical or not with this, as I have too few specimens for comparison, but it appears to differ in the colour of the chin and throat, which, instead of being rufous edged with paler, is of a dark olive brown, edged with white. It is also somewhat smaller. Should it prove distinct on further examination, I would suggest the name of *P. (micropternus) gularis.*

No. 215—*P. tiga.*—Mr. Blyth considers a specimen I sent of this bird to be the *P. shorii,* as I had suggested in my catalogue—but the smaller specimens alluded to are probably the real *P. tiga,* or it may be Blyth's *P. intermedius.*

* No. 215 bis.—*P. shorii*—Vigors.

No. 217—*Bucco viridis.*—The true *B. viridis,* as I find on reference to the figure in Pl. Enl. pl. 870, is the bird found

on the Neilgherries, and occasionally in other parts of the Malabar Coast.

* No. 217 bis.—*Bucco zeylanicus*—Lath.—*B. lineatus*, Tickell—*B. caniceps* Franklin—*B. viridis* Jerdon Cat., in part.—This large Bucco is found in all the jungles of India, as well on the East as on the West Coast. I have specimens from Malabar, and the Eastern Ghauts—and have seen others from Goomsoor, and Bengal. The individuals appear to differ somewhat in the form of the bill—but this is not sufficient, I imagine, to form grounds for their separation—as specifically distinct.

Length $10\frac{1}{2}$ inches, W. 5, T. $3\frac{1}{2}$, Bill (front) $1\frac{2}{10}$, Tars. $1\frac{2}{10}$ths.

* No. 216 bis.—*Bucco barbiculus*— Cuv.—A small species obtained by Lord A. Hay from the jungles of Malabar, and of which I had no description, was thus named by Mr. Blyth, to whom I sent a specimen for examination.

Length 6 inches, W. $3\frac{2}{10}$, T. $1\frac{1}{2}$, Bill (front) $\frac{6}{10}$ths.

It differs chiefly from *B. Indicus* in the red of the fore part of the head not reaching so far back, and in having all the parts that are yellow in *Indicus*, bright red; also in wanting the striated lower plumage.

No. 222.—*Cuculus fugax.*—I think that this the common species of India should be named *Cuculus Lathami*, the name given to the adult bird in Gray and Hardwicke's Illustrations; I have not seen, nor heard of its having been obtained from any of the Malay countries, and a species in Lord Arthur Hay's collection from Malacca, appears to correspond with Horsfield's description.

* No. 222 bis.—*Cuculus micropterus* Gould.—I have obtained this Cuckoo of late, once in the Carnatic near Nellore. It also probably occurs in the West Coast, but it is certainly rare in the South of India.

No. 223—*Cuculus himalayanus.*—Mr. Blyth has referred a specimen sent him of this bird to the *Cuculus sonneratii.*

Latham, with which he also identifies Horsfield's *pravata*—but I possess a specimen from Malacca very distinct from our peninsular bird, which is probably that species. As this is a rare bird, and only found in the West Coast, I think it not improbable that it may prove distinct from the species taken by Sonnerat, and in that case I would suggest the name of *Cuculus venustus.*

* No. 223 bis.—*Cuculus poliocephalus,* Lath. *C. himalayanus,* Vigors.

I obtained a single example of this Cuckoo in the cold weather, near Nellore.

No. 224 *Cuc. flavus.*—The synonyms I adopted with doubt do not apply to this bird, and the Malayan specimens referred to this bird (of which however *C. merulinus* Scopoli, is a prior name) being usually smaller, and in rather different plumage; the name at present adopted for this Cuckoo is that of *C. tenuirostris,* applied to the young bird in Gray and Hardwicke.

* No. 225 bis.—*Cuculus (Chrysococcyx) lucidus.*—On obtaining access to Brown's Illustrations of Zoology, and carefully examining his birds, I at once recognised his figure of *Trogon maculatus* as an immature bird of this species. It was stated to have been found in Ceylon, and if so, is very probably a rare inhabitant of the forests of the West Coast. It has been procured by Mr. Blyth from central India.

No. 228—*Eudynamys orientalis.*—I think it probable that the *Cuculus honoratus* of authors figured in Pl. Enl. pl. 294, is merely the young of this bird.

* No. 229 bis.—*Zanclostomus tristis,* (Lesson) *longicaudatus,* Blyth.—This Cuckoo has been obtained from the jungles of Goomsoor.

No. 230—*Zanclostomus sirkee.*—Mr. Blyth has recently procured two additional closely allied species to the one found in Southern India, one of which from central India, he considers to be the true *sirkee,* and mine he concludes to be

the *Taccocua Leschenaultii* of Lesson, whose generic name, though not very euphonous, will stand for this division, which is very separable from *Zanclostomus,* partaking more of the habits of *Centropus,* feeding a good deal on the ground.

No. 231 bis. Suppl. Cat. —*Centropus bengalensis.*—As I have lately obtained a specimen of *Centropus lepidus* from the Eastern Ghauts, I am inclined to believe that it was this species that was observed by Mr. Elliot in the Southern Mahratta country.

No. 233 —*Cinnyris polita.*—It appears that the name of *Loteniæ*—L., must stand for this Honeysucker, as it was originally given by Linnæus to a bird from Ceylon, and was afterwards misapplied to an African, or Madagascar species, somewhat allied in colouring.

No. 236—*Cinn vigorsii.*—This handsome species is *C. goalparieusis,* Royle—*C. miles,* Hodgson—and *Nectarinia Seheriæ* of Tickell.

No. 236 bis. Suppl. Cat.—*C. longirostris.*—This is the *inornata* of Temminck, now referred to *arachnothera.*

* No. 237 bis.—*Dicœum erythrorhynchos,* Latham, *D. Tickelliæ,* Blyth.—I obtained a specimen of this little species from Malabar through the kindness of my friend Mr. Ward.

No. 238—*Upupa minor.*—Mr. Blyth considers the lesser Hoopooe of Southern India to be identical with the West African species named *Senegalensis* by Swainson—and distinct from *minor* of S. Africa.

* No. 238 bis.—*Upupa Epops.*—The European Hoopooe, common in Bengal, is also occasionally found here. I obtained it on the Neilgherries only.

No. 240—*Merops Philippinus.*—On comparing the figure in the Pl. Enl., I think that our large Bee-eater is not the one there represented, and a Malacca specimen in Lord A. Hay's collection agrees much better with the figure—*Merops*

Javanicus is identified with *Philippinus*—our Indian bird is certainly the Chesnut throated Bee-eater, Latham.

No. 245.—On comparing Malay specimens of *Halcyon capensis* with those of Southern India, a very perceptible difference is at once observed, and, as the former agree exactly with the figure and description in the Pl. Enl., which I had previously been unable to identify with our peninsular bird, I shall now give this the name of *Halcyon bruniceps*. Mr. Blyth (J. A. S. vol. 14) has also recently pointed out the distinctions—which are, the unvarying brown tint of head and hind neck in our Indian bird—to which I may add, that the blue colour of the wings and tail is much deeper in the Malay bird. It is evidently the variety mentioned by Latham, who considered it distinct, as well as his var. D. of the black-capped Kingfisher, No. 27.

* No. 245 bis.—*Halcyon atricapillus*.—This fine Kingfisher must be added to our peninsular Fauna, as I have obtained specimens from the West Coast.

No. 246.—This little Kingfisher will stand, I consider, as *C. tridactyla*. Vide my Illust. Ind. Ornith. pl. 25.

No. 248 bis.—*Ispida rudis*.—As the African and Indian birds are now considered distinct, and as this name was applied to the African bird, Strickland has called the Indian one *Ispida varia*.

No. 253—*Caprimulgus Mahrattensis*.—Mr. Blyth considers that a fine night jar which I lately obtained from the Eastern Ghauts, and which was referred to by me in my Illustrations pl. 24, as probably *C. macrourus* Horsf., will turn out to be Sykes' *Mahrattensis*—and that the true *Macrourus* is a very closely allied species which he lately obtained from Arracan.

* No. 253 bis.—*Podargus Javanensis*.—I received from Captain Roberts of the 36th N. I., an excellent observer, a very accurate account of this bird, which he obtained at the Peria pass, leading from Malabar into the Wynaad.

* No. 255 bis.—*Cypselus leuconyx*—Blyth J. A. S. vol. 14. —I procured this Swift in the Deccan, and have also obtained it from Malabar.

* No. 255 ter.—*Cypselus montanus*—new species.—I must consider this little Swift as distinct from *affinis*, though Mr. Blyth (J. A. S.) only looks on it as a young bird—and I hope to obtain more specimens for comparison. It differs chiefly in its smaller dimensions, but on comparing it with true affinis, various differences appear in the shade of colour, especially in that of the head and neck. It inhabits cliffs on the Neilgherries.

L. 4 $\frac{3}{10}$, W. 4$\frac{8}{10}$, T. 1$\frac{7}{10}$.

No. 257 bis. Suppl. Cat.—This is the *Chætura gigantea* (Tem.) found also in various parts of the Malay provinces. An allied species the *Ch. Macraptera,* Swains., vel *nudipes*, Hodgson, is found in the Himalayas.

No. 259—*Hirundo erythropygia*, Sykes.—This is the *H. daurica* of Authors.

No. 261 bis. Suppl. Cat.—*H. domicola.*—Mr. Blyth informs me that this is identical with *H. javanica,—neoxena,* Gould, and that it is figured in Gould's Bird of Australia.*

No. 261—*H. unicolor.*—This species since referred by me to the Swifts, and called *C. concolor* by Blyth (there being already a *C. unicolor*) has been quite recently referred by that naturalist to the groub *Colocalia,* the type of which is the *H. esculenta* of the Malay provinces. This is very interesting, as, if its nests can be discovered on the precipitous cliffs near which it is seen, they will probably be found similar to those of its far-famed congener.

No. 263 bis. Suppl. Cat.—*H. inornata.*—This Swallow turns out to be the *H. rupestris* of the South of Europe. It was also named by Hodgson H. *rupicola.*

(To be continued.)

* Mr. B. has more recently informed me that *H. jewan* is referred to *Javanica*, and *domicola* to *pacifica*, Lath.

XII.—*Descriptions of some supposed New, or Imperfectly Described, Species of Birds.*

By Lord Arthur Hay,

A. D. C. to the Marquis of Tweeddale.

Nisætus albo-niger,—Bl. young ?

From Malacca, and perfectly distinct from any of the other species of the group, though approaching nearest to *N. Cristatellus* in the young plumage, being however much smaller. This bird has the head crested as in *N. Cristatellus;* the feathers forming the crest being black, slightly edged with dirty white at the tips; all the under parts white washed with light fulvous, darkest on the flanks, and thigh coverts; upper parts brown, lightest on the head, two middle tail feathers similarly brown with three distinct broad black transverse bars, and a fainter one near the base of the tail; the outer rectrices lighter on their inner webs, and all the feathers edged with dirty white at the tips; under surface of the tail light, the black bands being seen distinctly only through the two middle and the two outer tail feathers. Primaries deep brown; outer webs of the first black; wings graduated; first quill $\frac{3}{4}$ths the length of the second, which is shorter than the third, while the fourth and fifth are nearly equal, though the fifth is longest; the under side of the wing is white near the flanks and shoulders, while the lower part is barred with black. The tarsus is closely feathered to the base of the toes. The whole form is strictly that of a Nisætus.

Dimensions.

Wings	11 inches.	Middle toe	$1\frac{4}{10}$ inches.
Tail	10 ,,	Bill from gape	$1\frac{5}{10}$,,
Tarsus	$3\frac{2}{10}$,,	,, base	1 ,,
Hallux	$1\frac{3}{10}$,,		

If my bird should on comparison be found distinct from *albo-niger,* I propose the name *Malayanus.*

Buteo (Butaster) fasciatus—New Species.

An interesting raptorial bird seemingly belonging to the group *Butaster*,* Hodgson, was sent to me from Malacca, and which I now describe as probably new, under the provisional name of *fasciatus*. Plumage above deep smoky brown; lores brown cinereous, and so distinct in hue from the surrounding feathers as to be readily remarked. A white superciliary stripe commences over the middle of the ears, a few of the feathers springing from the nostrils having white shafts and centres. The throat and chin are white, a black stripe extending longitudinally from the chin down the middle of the throat; a parallel black stroke bounds the white on each side; the upper part of the breast is of a uniform brown, but the lower part, the belly and flanks, thigh coverts and vent, have each of their respective feathers alternately and transversely banded with light brown and white, presenting a fasciated appearance; the shafts of these feathers are deep brown and preserve a uniform colour even when passing through the white. The upper tail coverts are of a similar hue with the rest of the upper parts, though some of them in my specimen are broadly tipped with white. The tail is smoky brown, broadly barred with three distinct transverse black bands, and one much fainter near the base; the shafts of the tail feathers are light or dark as they pass through either the light or dark parts of the tail. The under shoulder coverts are marked with light rufous brown upon a white ground, the under basal half of the wings is white, the tips of the primaries are black, while the quills are crossed by two or three straggling dark bands. The first quill is two-thirds the length of the wing, and much shorter than the second, which is a little shorter than the fifth, the third and fourth being equal and longest. The bill is black with the gape and basal half of the lower mandible dirty yellow in the dried

* Now *Poliornis*.

skin ; the tarsus is feathered a little beyond the knee and covered by octagonal scales.

DIMENSIONS.

Total length	11½ inches.	Hallux	$1\frac{1}{10}$ inches.
Wing	13 ,,	Bill from base	$1\frac{1}{10}$,,
Tarsus	$2\frac{7}{10}$,,	,, gape	$1\frac{4}{10}$,,
Middle toe	$1\frac{5}{10}$,,	Tail	8 ,,

Scops Malayanus—New Species.

It was not till after the strictest comparison had been drawn between this species and the *S. Aldrovandi* of Europe that I ventured to consider it as distinct. The grounds upon which I have separated the two species are these. First, the total absence of gray perceived in the plumage of *S. Aldrovandi;* secondly, the superior strength of bill and length of tarsus of that bird; thirdly, the distinct manner in which the under surface of the primaries are mottled, these differences I consider to be sufficient to warrant their separation, particularly as two species from Africa, *S. Capensis* and *S. Senegalensis* have been described and acknowledged as distinct—and also a species from Brazil, without possessing greater distinctions.

The present species was received from Malacca.

I shall now endeavour to point out the more prominent features in the plumage of the present bird. The under surface is distinctly divided into two equal portions ; the first including the chin, throat and breast, being wood-brown mottled with a little white, light rufous, and black, irregularly distributed ; the lower division including the belly, vent, thigh coverts, and under tail coverts, is white, speckled with deep brown and light rufous.

The ground of the upper surface is ferruginous wood-brown, closely speckled with black, and purest on the upper tail coverts ; four large white spots occur on each side of the

back, which when examined will be found to form only the outer webs of the feathers, to which they belong, the inner webs being like the rest of the dorsal plumage; each of these feathers is tipped with black; a little white occurs over each eye, and the cheeks are minutely speckled with white; the ears are bright rufous at the base, but resemble the dorsal plumage at the tips; the bristles which spring from the chin and nostrils are dirty white; the first quill has five rufous spots on its outer web, the second also has five spots, but the two nearest the tip only are rufous, the others being white; the spots on the three next quills are white, and those on the sixth are entirely rufous; the inner webs in *S. Aldrovandi* are barred, but these bars are wanting in the Malay *Scops*, light tawny blotches breaking only the hair brown colour of the quills; the tips of the quills however are faintly and minutely speckled; the third and fourth quills are equal and longest, the second and fifth are equal, and the first is shorter than any; the upper surface being but faintly barred, and hair brown.

The upper mandible of the bill is black, the under dirty yellow; in shape it closely resembles *S. Aldrovandi*, but is neither so high, nor so strong; the tarsus is not feathered as far down as in the European bird, the whole leg and foot is weaker, and the entire bird is smaller.

DIMENSIONS.

Wing	$5\frac{6}{10}$	inches.
Tarsus	$\frac{8}{10}$	,,
Tail	$2\frac{8}{10}$	,,

Buceros Violaceus, Wagler.

Lower portion of the breast, belly, vent, thigh coverts, tips of the quills, and tail, excepting the two middle feathers, white, the rest of the plumage glossy green black; first and

second primaries uniform black, short, narrow, and attenuated at the ends, in a somewhat similar manner to the first quill in the genus *Ptilinopus*, as seen in *Columba (P.) jambos;* head crested as in most *Buceridœ*, that is the longest feathers rising from the nape, and growing shorter towards the vertex. The two middle tail feathers surpass slightly the rest, and show an indication to be tipped with white; these feathers are more pointed than the lateral ones, which become almost truncate in form, and slightly graduated in length; this structure is to be observed also in the following species, as well as in *B. Albirostris, Malabaricus, Gingianus, Gingalensis, Coronatus* (Africa), &c.

The form of the bill in this species is very peculiar, the true line of the culmen may be seen along its whole length; a narrow groove commences at the nostril which is placed in it, and separates in a way the main portion of the upper mandible from its casque; the culmenoid ridge of the casque for half its length is much higher than the occipital plane of the head; the casque is much swollen all its length, though most so in the middle, where, when seen from above, it is broader than the bill; its posterior portion is much narrower than the front of the head, and its anterior portion is much pinched, so as to render it almost sharp; the sides of the upper mandible are concave, and the margins of the bill are dentated, and in my specimen much worn, irregularly notched, and broken. From Malacca.

DIMENSIONS.

Total length......	27 inches.	Bill from gape......	$4\frac{7}{10}$ inches.
Wing............	10 ,,	Gonys............	$3\frac{3}{10}$,,
Tarsus....	$1\frac{9}{10}$,,	True culmen........	$2\frac{3}{10}$,,
Hallux...........	1 ,,	Bill from nostril in a straight line.....	$4\frac{4}{10}$,,
Culmenoid ridge ..	$3\frac{2}{10}$,,		

Buceros Comatus, Raffles.

A specimen of what I consider to be this bird is now be-

fore me, but in case it should not be the same species, I add the following description; head, neck, throat, breast, tip of the primaries, belly and tail white—wings, back, upper and under tail coverts, vent, and thigh coverts, black; the feathers on the crown of the head are stiff, loose in the web, black at the base, with black shafts for half their length; immediately behind the nostril springs a tuft of loose stiff hairy feathers, half the length of the bill, and some of them with black shafts all their length; on the sides of the basal portion of the lower mandible, though not quite at the rictal angle, a few black bristles occur, these are so far spurious in that they show a slight tendency to run into the texture of a feather, a few scattered hairs in lieu of close webs springing from the sides of the shaft; the ciliary bristles are remarkably strong and black; the throat is thinly clothed with feathers; the crest is long and full. The white colour of the feathers is purest underneath the outermost ones which are of a tawny hue. The black colour of the ventral feathers inclines to rusty. The abdominal feathers are black for the basal half of their length.

The bill is of a dull horn colour mingled with yellowish white (in the dry state), there is no decided casque rising from the upper mandible, the highest part of its culmen being hardly higher than the occipital plane of the head; the upper mandible most bulged at the region of the nostrils, but much compressed beyond; the margins of the bill are very plainly serrated, the culmenoid crest is rounded, and not sharp, it occupies two-thirds of the true culmen, the curve of which proceeds along its base in the form of a furrow or groove, which is lost in the swelling of the bill near the nostrils. I regret not being able to detail the caudal structure, as my specimen is somewhat damaged; the claws are (as in most of the *Buceridæ*) deeply grooved on their under surface, thus making the lateral corneous sheathing quite thin and pliable. From Malacca.

DIMENSIONS.

Total length	44 inches.	Bill Nostril in a straight line....	$5\frac{3}{10}$ inches.
Wing............	14 ,,	Culmenoid ridge....	4 ,,
Tarsus.........	$2\frac{5}{10}$,,	True culmen.	$2\frac{3}{10}$,,
Hallux....	$1\frac{2}{10}$,,	Gonys......	$3\frac{7}{10}$,,
Bill from gape,....	$6\frac{2}{10}$,,		

Buceros Malayanus, Raffles. Adult ?

The whole of the plumage glossy black, (appearing slightly green in certain lights) with the exception of the lower ends of the four outermost tail feathers, and the coronal circle, which are white—bill and feet black. Three specimens are before me, two agreeing entirely in their plumage, structure, and colouring of the bill, the other differing from them by having the bill perfectly white, and its protuberance differently shaped, as if not fully developed, and in having the white of the tips of the outer rectrices more developed; the crest also in this supposed young bird is not so large, as if it also had not arrived at maturity.

The bill without the casque in the adult bird is very similar to that of *B. carinatus*, Blyth, while that of the young bird resembles it closely, the casque not being fully developed in front, its superior margin hardly breaking the true culmen; the anterior edge of the casque in my adult bird, on the contrary, is almost perpendicular to the occipital plane of the head, while its posterior portion divides the feathers of the head, as it also does in the young bird; this posterior portion is bulged and rounded; as the casque advances on the beak, it becomes compressed, and its culmenoid ridge is so rendered quite sharp; the commissure in the old bird is toothed, as in the *Pteroglossi,* this is not so distinctly visible in the young bird; the gular region is clothed with feathers, though the parts near the edges and angles of the lower mandible are bare; this nakedness is more marked in the young bird than in the old ones. The crest has its mesial portion quite black, and the rest white; the black not being so extended posteriorly as the white.

Dimensions.

Adult.

Total length	29 inches.
Wing	$11\frac{5}{10}$,,
Tarsus	$1\frac{9}{10}$,,
Hallux	$1\frac{1}{10}$,,
Gonys	$2\frac{6}{10}$,,
Bill from gape	$4\frac{3}{10}$,,
Protuberance from base	3 ,,

From nostril to the tip in a straight line	4 inches.
From anterior edge of protuberance to the tip of the bill.	$2\frac{6}{10}$,,
From base to tip in a straight line	$4\frac{6}{10}$,,
Of white portion of the crest from above the eye	$3\frac{7}{10}$,,

Young.

Total length	28 inches.
Wing	$11\frac{3}{10}$,,
Tarsus	$1\frac{9}{10}$,,
Hallux	$1\frac{1}{10}$,,
Gonys	$2\frac{2}{10}$,,

Bill from gape	4 inches.
,, nostril	$3\frac{5}{10}$,,
Total length from base	$4\frac{5}{10}$,,
White portion of the crest	3 ,,

Buceros Elliotti—New Species.

This species resembles the last one very closely, but it is much larger, and wants the white bordered crest, otherwise the description I have given of the plumage of *B. Malayanus* will do for this one; in my only specimen, the bill has evidently arrived at maturity, and is perfectly white; the posterior portion of the casque covers a portion of the vertex, and is eight-tenths of an inch higher than the occipital plane, its posterior edge being one and seven-tenths of an inch behind the nostril when measured in a straight line; a ridge proceeds from the nostril, and marks where the true culmen would be if the casque were absent; this ridge ends where the culmen begins; two more ridges run almost parallel to it, and above it, thereby causing two corresponding furrows; a third furrow is formed by the uppermost ridge and the swell of the casque, which commences to bulge above it; a fourth ridge is thus formed, but which is much broader and more rounded than the lower ones, and is bounded along its superior edge by a fourth furrow which is the last. The casque becomes compressed as it advances on the bill, and is at last narrowed into a point, its anterior edge instead of being perpendicular with the occipital plane, forms with it (supposing the occipital plane to be continued) an obtuse angle, and consequently an acute

angle, with the true culmen; the margins of the bill are serrated, and the whole bill is a miniature resemblance of that of our common Malabar Hornbill, *B. pica.*

The first and second quills are formed similarly to those of *B. violaceus.*

DIMENSIONS.

Total length.. ..	34 inches.	True Culmen ...	$3\frac{4}{10}$ inches.
Wing..	13 ,,	Bill from gape....	$5\frac{8}{10}$,,
Tarsus	$2\frac{4}{10}$,,	,, nostril..	$5\frac{5}{10}$,,
Hallux.........	$1\frac{5}{10}$,,	Gonys......	$3\frac{6}{10}$,,
Culmenoid ridge.	$5\frac{2}{10}$,,		

This Hornbill would be identical with Eyton's *bicolor* if the three lateral rectrices and the tips of the rest of the tail were white (rectricibus tertiis lateralibus caudæque apicibus albis ;) but as this species has got the tips only of its four lateral rectrices white, and the two middle tail feathers wholly black, it does not agree with Eyton's description.

Picus Melanogaster—New Species.

A very distinctly marked species of Woodpecker from Malacca, and apparently new; the only two specimens I possess are not in full plumage, their general colours being as follows: Back and wings when closed red marroon with a waxy gloss—europygium of a dull rusty brown, or of duller and browner tint than the back; head (as seen in my immature specimen) rusty brown, with the forehead much lighter and inclining to tawny brown; the usual Picine crest not much developed and longest at the nape, where the tips of the feathers are of a bright crimson or almost blood red, and bearing in colour and texture though not in form a somewhat similar resemblance to the tips of the secondary quills of the *Wax wings;* the whole of the under parts excepting the chin are dark olive rusty brown, almost inclining to black, and to which colour I suspect the feathers of the old birds turn; the chin and forehead are similar in

colour; the upper tail coverts and the rectrices are brownish black, barred with lighter bands, the middle rectrices not forming an exception; first quill of the wing almost spurious and the outer webs of the Primaries are distinctly spotted, and their inner webs more faintly barred with a colour similar to the caudal bands. The bill is ivory white, and the feet in the dried skin black.

This bird's generic characters seem to place it near the genus *Dendrocopus*, if not in it.

DIMENSIONS.

Total length	$8\frac{3}{10}$	inches.	Outer hallux	1	inch.
Wing	$4\frac{8}{10}$	,,	Outer toe	1	,,
Tail	3	,,	Bill from base	$1\frac{3}{10}$	,,
Tarsus	$\frac{6}{10}$ths.	,,	,, gape	$1\frac{5}{10}$	,,

Gracula Religiosa, Linné.

Under the name of *G. religiosa*, Linné confounded two, if not more species. Cuvier subsequently separated the largest species which is found in Malasia from the continental Indian species, naming the former *Javanus*, and the latter *Indicus*, without regard to Linné's prior name of *religiosa*, (which was applied to two species whose distinctness he allowed in his *systema naturæ*, but to which he only gave the one name above mentioned.) This is I believe generally allowed to apply to the larger or Malasian species, but on reading over attentively the notice, given by Linné in his system, of the *G. religiosa*, I find that the first bird described is evidently our Peninsular bird, as it is distinctly said that the variety *No. 2* is much larger. The name *religiosa* therefore ought most certainly to be retained to the first described species, and not to the variety. I have now before me specimens of three distinct species, the first from Malacca, the second from Malabar, and the third from Northern India and Arracan; the third species is intermediate in size between the Malacca and Malabar bird, and differs in other points also, which I will

point out. To the Malabar bird, as I said before, I would retain Linné's name of *religiosa;* to the Malacca bird, should it prove the same as the Javanese species, the name of *Javanus;* and to the third species which has not as yet been noticed as distinct, I would, to avoid confusion, give Cuvier's name of *Indicus,* and so avoid adding another name to the already overloaded list of synonyms.

As the two names *religiosa* and *Indicus* have become so mixed up that they have been applied by some to our Indian bird, and again in the opposite way by others to the Malasian bird, the following description and dimensions will perhaps serve to aid the elucidation of the species, should my previous remarks not prove satisfactory.

1st.—*G. religiosa,* Linné, Jerd. Cat. 168.

The whole of the upper plumage and the lesser shoulder coverts glossy purplish black, the metallic reflections changing to green on the lower part of the back and upper tail coverts; under plumage the same as the upper, though not so bright; under tail coverts dull black and fringed only at the ends with the glossy hues of the general plumage; this latter character indeed is possessed by all the feathers when taken singly. Wings and tail, coal black without reflections; the spurious quill is very short, and quite black; the first primary has a white mark on its inner edge only; the next six have the white marks on both sides of the shaft, but forming in the sixth (that is the seventh including the first) a roundish blotch, and not occupying the whole breadth of the inner web; the wattles on the head commence below each eye, pass beyond the ear where each forms a small flap, and then returns on to the head, so dividing the occiput and nucha into three distinct portions, which are closely clothed like the rest of the head with short velvety feathers. The legs are yellow, the bill orange, and the eyes deep brown.

Specimens in my Cabinet both from Malabar and Goomsoor agree perfectly in their colours, form, and dimensions.

2d.—*G. Javanus, Eulabes Javanus,* Cuvier. *G. religiosa,* Cuv. apud Horsfield, Zoological Res. In Java. *Eulabes Javanus,* Vieil.

This species is perfectly distinct from the former, and is as Linné remarks much larger; but its superior size is not its only distinction, for the form of the bill and shape of the wattles form very marked differences; in plumage, the two agree pretty closely, though perhaps the Malay bird is the brightest of the two; a large stripe of deep velvety black feathers begins just above each eye where it is narrowest, and widens as it recedes, occupying the greater portion of each side of the head, and nearly joining at the back of it; from the base of the bill, and bounded on both sides by these black lateral bands, passes the medial stripe of the feathers which clothe the remainder of the head, and which are of a purplish gloss, similar to the rest of the plumage; this stripe narrows as it recedes, its narrowest portion being where the lateral bands so nearly join; below each eye is a naked space of orange coloured skin, and quite unconnected with the large wattles that occur at the back of the head, and which commence from behind each eye, occupying but a very narrow space at first, and then suddenly widening into two broad four cornered flaps.

The distribution of the white on the *Primaries* and the colour of the bill and legs is as in the former species. The bill, though preserving a similar structure, is twice the height. This species is I believe found in all Malasia, though my specimens were received only from Malacca.

3d.—The species to which I would retain Cuvier's name of *Indicus* is intermediate between the first and second; the bill is rather larger than that of our Peninsular species, but the wattles partake in form of both the former species; in the manner that they are placed below the eye, they resemble those in *G. religiosa,* while from their not returning on to the occiput, they bear some affinity to *G. Javanus;* the black

lateral bands hardly observed in *G. religiosa*, and so marked in *G. Javanus*, occur in this species only before and behind the eye but not over it; thus causing a hiatus which is replaced by the proper feathers of the head; in size the *G. Javanus* is the largest, and the Peninsular species the smallest, while the only distinction in the general plumage of this species, and which is perhaps merely the effect of age, i.e., that the primaries and secondaries are edged with rusty brown, thus almost forming a band across the wing.

I shall now add the dimensions of all three species.

	The Peninsular Species. *G. Religiosa*, Linné.	Malay Species. *G. Javanus*, Cuvier.	Northern Indian Species. *G. Indicus*.
Total length......	$8\frac{5}{10}$	 10	.... $9\frac{8}{10}$
Wing..........	$5\frac{5}{10}$	.... $6\frac{9}{10}$	.... $6\frac{5}{10}$
Tarsus..........	$1\frac{1}{10}$	.... $1\frac{4}{10}$	.... $1\frac{2}{10}$
Middle toe.......	$1\frac{1}{10}$	.... $1\frac{6}{10}$	.... $1\frac{2}{10}$
Hallux..........	1	.... $1\frac{3}{10}$	.... $\frac{9}{10}$
Tail..........	$2\frac{5}{10}$	.... $3\frac{8}{10}$	.... $3\frac{7}{10}$
Bill from base ...	1	.... $1\frac{2}{10}$	.... $1\frac{1}{10}$
„ from the			.... $1\frac{3}{10}$
rictal angle	$1\frac{3}{10}$	.... $1\frac{4}{10}$	.... $1\frac{3}{10}$

The difficulty attending the description of species so apparently similar and yet differing so materially in particulars, will I trust plead some excuse for any faultiness in the above remarks; should Cuvier's name of *Indicus* be found to apply to our common species, or to the Malay bird, I would propose that of *intermedius* for the species I have provisionally retained to *G. Indicus*.

The outline of the bill given in Swainson's synopsis agrees with our Peninsular species, and is evidently meant to represent that of Linné's *G. religiosa*.

Ceblepyris Culminatus—New Species.

I received this species from Malacca, and it seems to differ from any that have as yet been described. General cast of the plumage iron-gray, uniform on the head, back of the neck and black under parts, and upper tail coverts, lighter, speckled and striated with white; a black mark from the base of the

bill to the eye. Primaries slightly edged with white, secondaries, more so; under surface of the wings uniform hair brown without white, two middle tail feathers cinerous brown, tipped with white,—Bill moderate, not compressed, and high. Bill and feet black.

DIMENSIONS.

Total length...	$6\frac{7}{10}$ inches.	Tarsus..........	$\frac{7\frac{1}{2}}{10}$ inches.
Wing...	$3\frac{7}{10}$,,	Bill from base...	$\frac{6}{10}$,,
Tail...	$3\frac{3}{10}$,,	,, gape...	$\frac{8}{10}$,,

Muscicapa Bella—New Species.

General dorsal aspect cobalt blue, the head and shoulders of a lighter and more brilliant tint; the blue on the back of the neck changing in some lights almost to violet; chin, throat, cheeks, and breast dull blue-black; lower part of the breast, the belly, vent, and under tail coverts pure white; flanks dusky, wings hair brown beneath, under shoulder coverts light blue; spurious quill very short and dark without any blue on the outer edge, all the primaries excepting the first, edged with blue on the external webs of the feathers, but not reaching to the tips of the three first, so that when the wings are closed it appears blue, excepting at the ends.

The tail, which is moderate, has only the two middle feathers wholly blue on the upper surface; the remainder being so on their outer webs; the under surface of the tail is deep black; the bill and feet are black. In form the bill resembles that of *M. Cærulea*, Vieil, though it is rather thicker and more robust. From Hong-kong.

DIMENSIONS.

Total length ...	$6\frac{3}{10}$ inches.	Middle toe... ..	$\frac{6}{10}$ inches.
Wing..........	$3\frac{3}{10}$,,	Hallux..........	$\frac{3}{10}$,,
Tail.	$2\frac{9}{10}$,,	Bill from base....	$\frac{4}{10}$,,
Tarsus..	$\frac{6}{10}$,,		

Phœnicornis? Aureopygia—New Species.

This little bird does not strictly belong to the genus *Phœni-*

cornis, and it is with doubt therefore that I refer it to the group; the distribution of its colours show however a decided affinity to *P. peregrinus*, and in other respects it seems nearly allied to it.

The plumage is of a silky texture, and puffy upon the rump, where it is of a rich golden yellow, and of a lighter hue than the feathers of the throat and upper part of the breast which are deep orange; the lower part of the breast and the belly are rich lemon yellow; the flanks are dusky and the under tail coverts and scapulars pure white; an orange coloured streak commences at the base of the upper mandible and passes round the eye to the ears; the remainder of the plumage is dull black. From Hong-kong.

DIMENSIONS.

Total length....	$4\frac{3}{10}$ inches.	Tarsus...... ...	$\frac{6}{10}$ inches.
Wing........	$2\frac{9}{10}$,,	Middle toe......	$\frac{6}{10}$,,
Tail..........	2 ,,	Hallux..........	$\frac{3}{10}$,,

Muscipeta atrocaudata, Eyton?

Cat. of Malay Birds, Pro. Zool. S.

A lovely species of Muscipeta now before me and shot near Hong-kong, seems nearly to agree with Eyton's description of the above named bird; but as his description is very short, and is taken from a Malay specimen, I take this opportunity of fully describing my specimen, which is evidently an adult. Head, cheeks, throat, breast and tail coal black without reflections; belly and under tail coverts pure white; flanks dusky; back, shoulder and wing coverts, deep glossy marroon purple, inclining to black on the upper tail coverts. Primaries black; secondaries edged with the same colour as the back; bill and legs black, the head ornamented with a long black crest. As there are some discrepancies between my specimen and Mr. Eyton's short description, I add the latter. "Toto corpore purpureo-atro, sed pectore imo abdomineque alba."

It will be seen that the expression "toto corpore purpureo-atro" does not altogether apply to my specimen, and as mine is from Hong-kong, it may probably be a new species, in which case I beg to propose the specific name of *elegans*.

DIMENSIONS.

Wing..	$3\frac{5}{10}$ inches.	Body of tail	4 inches.
Tarsus....... ..	$\frac{6}{10}$,,	Bill from gape....	$\frac{9\frac{1}{2}}{10}$,,
Hallux.........	$\frac{5}{10}$,,	,, base....	$\frac{7}{10}$,,
Middle toe	$\frac{5}{10}$,,		

The two middle tail feathers exceed the body of the tail by 7 inches and 7-10ths.

Genus *Brachypus*, Sw. Sub-Genus *Hœmatornis*, Sw.

Hœmatornis atricapilla, Vieil. *Chinese Bulbul.*

I received this interesting species from Amoy, and have no doubts in referring it at once to Swainson's sub-genus Hœmatornis, and as one of the most typical forms.

The head is black and sub crested; the chin and base of the lower mandible the same as the wings, which are of a light hair brown, deepest upon the quills; the tail and back are of the same tints, the feathers of the back being deepest in colour towards the shafts; the lower end of the tail feathers is the darkest; all except the middle pair are broadly tipped with white, most marked on the under side; the cheeks, throat, breast, belly, flanks, upper tail coverts, and thigh coverts are of a uniform dirty white; the under tail coverts scarlet.

The bill is black, distinctly notched, and is strictly that of a Hœmatornis, at the gape there are but few bristles;—the wings are moderate, the first quill is very short, half the length of second, the third, fourth, and fifth, are graduated, the latter longest; the legs are black and feathered below the knees, the tarsus short and strong;—the anterior scales simple, the lateral toes are equal, the middle toe is shorter than the tarsus,—the claws are compressed and pointed, the tail is more or less square, and consists of twelve feathers.

Caprimulgus Pulcher—New Species.

The Beautiful Goat Sucker.

I received this splendid Goat Sucker from Malacca, and having failed in finding a description at all approaching to it, hesitate not in describing it as new.

Black and deep brown predominate throughout its plumage, though markings of tawny yellow mingled with light brown are perceived on the belly and breast; the usual white mark on the throat is seen in this nightjar, but no other white markings are to be found in its plumage: the head is of the richest speckled brown, with a black streak down the middle; the chin and upper part of the breast are mottled richly with black and brown, the breast is barred transversely with black and rich fulvous, each feather being black at the base, then fulvous, and then a slight edging of black. On the belly, flanks, and under tail-coverts, light tawny predominates, the black edgings being narrow; the wing coverts are of the same rich mottled brown seen on the head; the primaries are coal black, with rufous spots on their outer webs; on the second quill eight of these spots occur, as also upon the third. On the under side of the wing the same spots are visible though fainter; the second quill is longest; the tail is also deep black slightly variegated with brown; the tail surpasses the wings by one inch and three-tenths. The bill is very small, and the tarsus as in Caprimulgus.

Dimensions.

Total length....................	10 inches.
Wings from shoulder........	8 ,,
Tail..........................	$5\frac{6}{10}$,,

Muscicapa Pectoralis—New Species.

It is with doubt that I refer this lovely species to the restricted genus Muscicapa, and yet its large size is perhaps the only objection to its being so classed.

Both the male and female birds were sent to me from Malacca, and after a diligent search amongst various Authors, no mention can be found of them, and so I now describe them as new.

The male and female birds agree in the general tone of the plumage, which is of a dark indigo blue, the points of difference between them being the rich claret coloured breast, black throat, cheeks, superciliary stripe, and forehead, of the male; while in the female the whole plumage is uniform blue, though perhaps darker on the throat and breast; the dorsal plumage is soft, long and puffy, and when ruffled shows white at the base of the feathers, as do also the feathers on the flanks; the male bird is slightly larger than the female; the wings are moderate and slightly rounded, the fifth quill is longest, the others graduated, the tail moderate and even; the tarsus is short and weak; the inner toe is shorter than the outer, and the inner and outer claws are remarkably short. The bill is Musicapine, and resembles that of *Chaptia Æneus*, though more depressed; the upper mandible is distinctly notched, and the rictal bristles are strong, and numerous; the bill only commences to be compressed near the end; the base of the bill is thickly set with short stiff feathers.

DIMENSIONS.

Total length........	7 inches.	Wing from shoulder.	$3\frac{4}{10}$ inches.
Bill from base.....	$\frac{6\frac{1}{2}}{10}$,,	Tail..............	$3\frac{5}{10}$,,
		Tarsus............	$\frac{7}{10}$,,

Muscicapa Zanthopygia—New Species.

As this species seems to be undescribed, I add the following description.

Head, cheeks, lesser shoulder coverts, back, and the upper tail-coverts, olive green, rump saffron yellow. Chin, throat, belly, flanks, and under tail-coverts light straw yellow, mixed with olive on the breast and flanks, inclining almost to white on the under tail-coverts—primaries and tail hair brown—

scapulars the same edged with white—secondaries tipped with white—the upper mandible deep brown—the under yellowish at the base—feet plumbeous, first quill spurious, third and fourth nearly equal, third longest.*

The bill is intermediate between that of a Muscicapa and Saxicola—the rictal bristles are few and weak—the tarsus is lengthened, and longer than the hallux—the middle toe is long—the inner toe slightly shorter than the outer, the claws are much curved. From Malacca.

DIMENSIONS.

Total length.......	$4\frac{8}{10}$ inches.	Tail...	$1\frac{9}{10}$ inch.
Bill from base. . . .	$\frac{4}{10}$,,	Tarsus............	$\frac{6}{10}$,,
Wing from shoulder.	$2\frac{7}{10}$,,		

Turdinus ? Superciliaris—New Species.

This remarkable bird from Malacca seems to me to be referable to the genus *Turdinus*, though with doubt. Two specimens are now before me—one evidently the mature male, the other either the female, or young. The former has a distinct white superciliary stripe—the rump, upper tail-coverts, and tail are bright rufous, the latter tipped with a broad deep brown band; head, nape, back, chin, throat, and breast, dark smoky black, deepest above; wings deep brown; abdomen, flanks, and under tail-coverts white washed with rufous; bill black; legs pale yellow. Length $8\frac{1}{2}$ inches, of wing $4\frac{2}{10}$, of tail 4, tarsus 1, bill from gape, $1\frac{1}{10}$, at base $\frac{8\frac{1}{2}}{10}$.

The young bird differs in having its plumage above mixed with rufous, in being smaller, and in wanting the superciliary stripe. At first sight this curious bird gives one the idea of its being a large *phœnicura*. It is, however, decidedly *meruline* in form, and if separable from Turdinus, I would propose

* Since writing the above, I have seen the male of this species, in the collection of Dr. Cantor at Calcutta. It differs from the female in being much more brilliant in its hues—being bright yellow where the female is dirty light yellow, and deep black where the female is merely dusky.

placing it in a new genus to which I would give the name of *Turdirostris*, and characterize it as follows:

Bill strong, high, slightly longer than the head, and much compressed—gonys ascending, commissure almost straight—culmen slightly curved—maxilla obsoletely notched, weakly hooked—nares ovate, situated in a broad shallow groove, and near the commissure, protected by thick-set, stiff feathers, and bristles. Rictal bristles very strong and defending the eye. Legs strong—tarsus moderately long, longer than the hallux. Toes moderate, inner toe shorter than the outer, middle toe equal to the tarsus, claws moderately strong, that of the middle toe bulged internally, of the hallux very strong, curved and sharp. Wings moderate, almost pointed. 1st quill short, 2d shorter than the 3d, 5th and 6th equal and longest. Tail long square, of 12 feathers.

NOTICES.

METEORIC STONE.

A large meteoric stone fell at Voolapilly in the Mundapettah division of the Rajahmundry district, on the 4th November, 1844.

Mr. Bird, Collector of the District, kindly sent the depositions taken at the time and reported to him, which in substance are as follows:

About 3 or 4 A. M. of the 4th November, a bright light was seen in the heavens by a night watcher in one of the fields near this village, accompanied at first by a loud humming sound: the light rapidly increased in intensity, and in a very few moments appeared to fall to the ground with an explosion like that of a large gun. It appeared to the observer to fall very close to him, and for some time he was so dazzled by the intensity of the light, and stupified with alarm, that he was unable to move. After a few minutes, he recovered, and endeavoured to find where it had fallen, but in vain; though he said it was so near as to have thrown some mud and dirt on him. This, however, is easily accounted for, as the field was under cultivation. He represented that the night was clear and calm; he was standing looking eastward at the time, and the Meteor appeared to come from the South. He described its appearance as resembling some native firework, and that the light, at first dull, afterwards

became dazzling white. A few days afterwards a large hole, one yard deep and half a yard in width, was found in a piece of cultivated paddy land, where the watcher had been stationed, by the Braminy owner of the field, whilst weeding, which, on examination by a stick, was found to contain some dark hard substance. He called some of his neighbours and had it dug out, when it was found to be a 'stone mixed with iron,' the weight of which was ascertained to be $37\frac{1}{4}$ seers or about 75 pounds. Mr. Bird has sent to the Literary Society a large fragment weighing 30 pounds, it having been broken by the villagers in the hope of finding gold. It does not appear to differ in external characters from the meteoric stones hitherto described, and will doubtless on analysis prove identical in composition.

METEOR AT MADRAS.

The following account of a singularly beautiful Meteor seen here, from the pen of T. G. Taylor, Esq., the Honorable Company's Astronomer, appeared in the columns of the Madras *Spectator* of the 9th August.

"A Meteor of singular beauty and brilliancy was witnessed at Madras, at ten minutes past seven o'clock on the evening of Saturday the 2d instant. Its commencement was hid from my view by trees, but its course, as well as could be judged from the progress of the shadow of an adjoining verandah, was from NNE. to S., passing within about thirty degrees of the zenith. It was visible during about two seconds of time, in which interval it passed over an arc of at least eighty degrees, and finally burst with an intense degree of brightness at about twenty degrees above the horizon, due South. I immediately commenced counting seconds, and at the expiration of three minutes and fifty-eight seconds (or 238 seconds) was gratified in hearing a peculiarly loud but low and deep toned report, followed by a vibratory sound somewhat resembling that which distinguishes distant thunder. Assuming the velocity of sound to be 1180 feet per second, the report must have taken place at a distance of 53 miles from me; and with reference to the altitude, it would appear that it must have taken place at about 18 miles above the surface of the earth, at a place situated 50 miles to the South of Madras, or a few miles to the South of Sadras.

"In the absence of data to furnish the actual track pursued by this Meteor, it may not be uninteresting to state, that the least velocity it could have attained was 25 miles per second—certainly greater than the velocity of the earth in its orbit.

" *Madras, 6th August*, 1845. T. G. T."

XIII.—Proceedings of the Madras Literary Society and Auxiliary Royal Asiatic Society.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Monday evening the 14th August, 1843.

Read a letter from C. P. Brown, Esq., dated 24th July, 1843, offering to the Society for sale "Causes Celebres," 27 volumes, priced at £ 4-10, besides charges of shipping, &c. Accepted.

Read two letters from Messrs. Allen and Co., dated London, 24th and 31st May, 1843, forwarding an Invoice for the monthly parcel of periodicals of June last, transmitted to the Society, and stating that they have included in the parcel a new Novel, (the False Heir), by James; and begging to know when works of an undoubted character are published, whether they may always venture to send them, leaving the bulk of the books to be ordered from Madras. Stating also that they do not understand what is meant by "Heber's Works," Elrington; and that they are at a loss to know what to send, the works of Heber being various, and not published in a collected form.

Resolved,—That the Society authorize Messrs. Allen and Co. to use their discretion in sending out a few works which are of undoubted character and interest, leaving the bulk of the works to be ordered from Madras; and that they are particularly requested not to forward any reprints of works which have appeared in the Magazines, unless expressly ordered.

Resolved,—That a letter of thanks be sent to Captain Newbold, mentioning that the letter to Dr. Jerdon was intended to have been a joint letter to that gentleman and Captain Newbold.

That a copy of Mr. Elliot's Analysis of the Canarese MSS. be sent to Captain Newbold, and the original MS. be returned.

The thanks of the Committee to be given to Walter Elliot, Esq. for having prepared the Analysis.

Resolved,—That the Secretary be authorized to wait upon the President, requesting him to fix a day for a General Meeting, to elect a member of the Committee in the room of N. B. Acworth, Esq.

Resolved,—That the Secretary be requested to take steps for completing the Society's set of the Asiatic Annual Register.

At a Special General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held at the Society's Rooms at the College, on Friday, the 1st September, 1843.

The Secretary stated that according to the existing rules of the Society there should always be twelve members of the Managing Committee, and that the present meeting has therefore been convened for the purpose of electing a member for the Committee in the room of N. B. Acworth, Esq., who has left the Presidency.

The meeting then proceeded to elect a member from among the subscribers to the Society, when it was proposed by Walter Elliot, Esq. that Lord Arthur Hay be nominated a member of the Committee, which proposition being seconded by Lieutenant Colonel Felix, he was accordingly elected.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Tuesday evening, the 19*th September*, 1843.

Resolved,—That the following letter be addressed to the Secretary to Government with reference to the resolution passed at the Meeting of the 11th May last.

To

G. D. Drury, Esq.

Chief Secretary to Government.

Sir,

I am requested, by the Committee of Management of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, to bring to the notice of Government, that there are at present in the Library at the East India House a number of manuscripts in the languages peculiar to Southern India, forming part, and the Committee have reason to believe the most valuable part, of the collection of the late Colonel Colin Mackenzie.

As these manuscripts cannot well be deciphered and translated without the assistance of learned Natives, it is obvious that there is little probability of their ever being turned to account whilst they remain in England; and as their contents may tend to furnish much valuable information elucidatory of the ancient history, literature, and antiquities of Southern India, the Committee are induced to suggest, through the Government, to the Honorable the Court of Directors, the advisability of the manuscripts in question being transmitted to this country, and the grant of a small sum with the view of effecting their translation.

Should the Honorable Court be pleased to accede to this suggestion, the Committee will be happy to render all the assistance in their power

in procuring eligible persons for the task, and to take part in its superintendence, and they will engage to publish the translations free of expense either in their own Journal, or in that of the Parent Society.

Should the Honorable Court deem it expedient to transmit only a portion of the manuscripts in the first instance, the Committee would suggest, that the works mentioned in the accompanying list should be selected for the purpose.

LITERARY SOCIETY,
College,
23*d September*, 1843.

I have the honor to be, &c.
(Signed) J. MINCHIN,
Secretary M. L. S. &c.

Memorandum by Mr. C. P. Brown, on the MSS. in the East India House Library.—When I was in England seven years ago, I framed catalogues of the manuscripts lying in the East India House Library. I mean those manuscripts which were in the Telugu, Canarese, and Tamil characters, which had laid unexamined and uncatalogued, some for twenty, others for forty years. As it is now proposed to send a portion of these books to Madras, I have been desired to specify those volumes, which may as well be left in Leadenhall Street: we having those works in plenty at Madras.

Accordingly all the collection should be forwarded to Madras, excepting the volumes noted in the following Memorandum.*

All the remaining numbers in the three lists should now be forwarded to Madras for examination. About one half of them are without title-pages, and for this reason are left unnamed in the catalogues I drew up. On these books being received at Madras, Natives will easily affix the proper title-pages: and then we may be able to select a large proportion to be immediately returned to London, because superfluous here.

The selection made in the present pages may enable the Librarians in England to retain the volumes here noted: but these will be retained as mere useless curiosities. I should certainly advise the transmission of the entire series to Madras without selection.

And that for an obvious reason, in examining the books it will be requisite to arrange them anew, in a more correct catalogue, and for this reason it is desirable that the entire collection should be examined simultaneously.

2*d September*, 1843. (Signed) C. P. BROWN.

* The Memorandum only specified the numbers not the titles of the books, and has therefore been omitted.

Resolved,—That an opportunity having offered for the purchase of "Corps D'Extraits de Chivalerie," that it be obtained for the Society.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Friday evening, the 20th October, 1843.

Resolved,—That the following Books be purchased for the Society:

The Banker's Wife, by Mrs. Gore.
Memoirs of the Marquis Pombal.
Sir E. Seward's Narrative of his Shipwreck.
Owen's Lectures on Invertebrate Animals.
Milton's Prose Works.
Barrow's Works, octavo edition, London, 1818.
Buckland's Reliquiæ Diluvianæ.
Baker's (Sir R.) Chronicle of the Kings of England.
Dodd's Church History, the 5th vol.
Forbes' Travels in the Pyrenees and Switzerland.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Monday evening, the 20th November, 1843.

Resolved,—That the following works be ordered out from England for the Society.

A second-hand copy of the Asiatic Annual Register, complete if procurable.
The Life of Lord Sydenham, by Powlett Scrope.
Dr. Henry's Memoirs of a Military Life.
A second-hand copy of Dryden's Works, by Sir W. Scott.
Beaumont and Fletcher, by Moxon.
Lettres de Madame de Sevigny.
Montaigne's Essays, the best French edition.
Masillon, Ouvres de.
Bossuet, ditto: all published by Didot, in imperial octavo, in double columns.
Champolion, Grammaire Ægyptienne, also by Didot.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Tuesday evening, the 12th December, 1843.

Read a letter from Monsieur Garcin de Tassy, dated Paris, 6th May, 1843—acknowledging the receipt of the Society's letter of the 8th October last, and requesting a copy of the 2d volume of the "Arabian Nights," in Hindoostany, printed in Madras.

Resolved,—That a bound copy of the Arabian Nights in Hindoostany be presented to Monsieur de Tassy, in the name of the Society.

Read a letter from M. Annuntachary Bramin, dated 25th November, 1843, forwarding a Sanscrit Poem in Telugu characters, composed by him in praise of John Goldingham, Esq.

Resolved,—That the same be acknowledged.

Mr. Walter Elliot lays on the table Lieutenant Braddock's Account of the Seven Pagodas, the Rev. W. Taylor's Sixth Report on the Mackenzie Manuscripts, and Captain S. Best's paper on Rain Gauges.

Resolved,—That these papers be sent in circulation to the Committee of Papers.

[These have been published in No. 30 of the Journal.]

On the motion of R. Cole, Esq., it is determined that all the numbers of the Society's Journal, containing papers by Captain Newbold, be forwarded to him.

Resolved, on the motion of the Rev. G. Knox,—The Hortus Malabaricus be sent to Dr. Jerdon at Nellore, in compliance with his request.

Resolved,—The following works be purchased for the Society.

Colonel Campbell's Reminiscences of Sports in Ceylon, Ehrenberg on the remains of Fossil Infusoria.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Monday evening, the 22d January, 1844.

Read the following letters from the Secretary to the Bombay Branch Royal Asiatic Society, dated 7th September, 1843.

Bombay Asiatic Society's Rooms,
7th September, 1843.

To

The Secretary Literary Society,
Madras.

Sir,

Under instructions of the Bombay Branch Royal Asiatic Society, I have transmitted for the Library of the Literary Society of Madras to you a

lithographed copy, in 2 vols. of the Vándidád, in the Zand language, but Gujarathi character, with a Gujarathi translation, paraphrase, and comment, by Aspandiarji Framji and other learned Dasturs of the Kádmi sect of Parsis. Of this work, the Society has had 25 copies lithographed at an expense of upwards of 1,000 Rupees, with the object of preserving a work now become rare in MS. and of distributing it amongst the principal Libraries in Europe and Asia. I shall be happy to receive an acknowledgment of the receipt of the work. The Society have also directed the Izashni, and Vispard, which compose the doctrinal standards of the Parsi faith, and the larger liturgy in use among the Zooroastrians, which will be forwarded as soon as ready.

The MSS. from which these works are copied are in possession of the Rev. Dr. John Wilson, late President and at present Honorary President of the Society.

I have the honor to be, &c.

(Signed) JOHN G. MALCOLMSON,

Secretary B. B. R. A. S.

Resolved,—That the Society's thanks be communicated through the Secretary to the Bombay Branch Royal Asiatic Society for the same.

Read a letter from the Secretary to the Bombay Branch Royal Asiatic Society, dated 27th December, 1843.

BOMBAY ASIATIC SOCIETY'S ROOMS,
27th December, 1843.

To

The Secretary Literary Society,
Madras.

SIR,

With reference to my letter, dated 7th September last, I have the honor to inform you that a copy of Izashni or Yaçna, and the Vispard, enclosed in the same parcel with the Vândidâd, have been this day shipped on board the *Royal Saxon*, Captain James Crawford, to your address, for presentation to the Literary Society of Madras. The same parcel also contains two copies of the late Dr. Forbes' Paper on the Nature and History of Plague in the North Western Provinces of India, from myself, of which I have to request the Society's acceptance of one, and that the other be presented to the Medical Society.

I regret that so much delay should have taken place in the transmission of the Vândidâd, to the cause of which it is not now requisite to advert.

I have the honor to be, &c.

(Signed) JOHN G. MALCOLMSON,

Secretary B. B. R. A. S.

Resolved,—That the Society's thanks be conveyed to the Secretary, J. G. Malcolmson, Esq., for the same.

Read a letter from the Secretary to Government, dated 5th January, 1844, transmitting a copy of a printed Report on the Honorable Company's Botanic Gardens, Calcutta.

FORT ST. GEORGE, *5th January*, 1845.

No. 27.

To

The Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society.

GENTLEMEN,

Public Department. I am directed by the Most Noble the Governor in Council to transmit to you copy of a printed Report on the Honorable Company's Botanic Gardens, Calcutta, received from the Government of Bengal.

I have, &c.

(Signed) J. F. THOMAS,
Secretary to Government.

Resolved,—That in acknowledging the receipt of this work, the respectful thanks of the Society be conveyed to the Most Noble the Governor in Council for the same.

The Secretary lays before the Meeting several letters received from the Society's Booksellers, advising the dispatch of Books and Magazines.

Life, Writings, and Inventions of Dr. Cartwright.
Barrow's Life of Sir F. Drake.
Gally Knight on the early Architecture of Italy.
Ranke's History of the Reformation, translated by Miss Austin.
Ireland and its Rulers since 1829.
English Universities by Huber, translated by Newman.
Travels of Marco Polo, edited by Marsden, second-hand copy; and Brewster's Edinburgh Journal, No. 18, in 1828, containing Lord Oxmantown's Experiments on Specula, or the number containing that Paper; and Coddington's Optics I. Refraction-Reflexion II. and Eye and Optical Instruments for Captain Worster.

(Signed) J. MINCHIN,
Secretary M. L. S. &c.

At an Annual General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held at the Society's Rooms, at the College, on Tuesday, the 23d January, 1844.

The Honorable Sir E. GAMBIER, President, in the Chair.

The Secretary submitted to the meeting an abstract statement of the funds of the Society for the past year, exhibiting a balance in its favor of Rupees 1,100 11 4.

The following donations having been made to the Society since the last annual general meeting, the thanks of the Society were unanimously voted to the donors.

Lieut. Eastwick's Vocabulary of the Sindi language, by the author.

Knox's Giotto and Francesca and other poems, by the Rev. G. Knox.

Printed Report on the Honorable Company's Botanic Gardens, Calcutta, by the Madras Government.

A lithographed copy in 2 vols. of the Vándidád, in the Zand language, but Guzarathi character, with a Guzarathi translation, paraphrase, and comment, by Aspandiarji Framji and other learned Dasturs of the Kadmi sect of Parsis, by the Bombay Branch of the Royal Asiatic Society.

Dr. Forbes' Papers on the Nature and History of the Plague in the North West Provinces of India, by J. G. Malcolmson, Esq.

It was announced to the meeting that the following gentlemen have been elected Members of the Society since the last annual general meeting.

Lieut. Col. P. Montgomerie, C. B.	S. D. Birch, Esq.
Hon'ble H. Chamier, Esq.	B. Cunliffe, Esq.
W. H. Rose, Esq.	Captain G. Halpin,
W. A. Serle, Esq.	T. S. Smyth, Esq.
Rev. E. Whitehead, A. M.	J. R. Boyson, Esq.

During the last year the Society has lost four Members by death, retirement, or departure for Europe.

Read a letter from Captain T. J. Newbold, dated 25th December, 1843, forwarding for presentation to the Society a specimen of sulphate of barytes from the Nullamulla Hills. The thanks of the meeting were unanimously voted to Captain Newbold for the same, and his valuable paper which accompanied it, containing an interesting geographical description of the locality from whence the mineral was procured, is referred to the Committee with a view to its being published in the next number of the Society's Journal.

[Published in No. 30.]

Mr. Walter Elliot exhibits to the meeting some ancient remains of Greek pottery received from Captain Cunningham, 23d N. I.

[Figured and described in No. 30 of the Journal.]

On the motion of J. Minchin, Esq. and seconded by B. Cunliffe, Esq., J. U. Ellis, Esq. and M. Lewin, Esq. were duly elected Members of the Managing Committee for the ensuing year, in the room of J. B. Norton, Esq. and Lieut. Col. Felix, who have retired, and the following gentlemen were unanimously re-elected Members of the Committee.

Captain S. Best,	Walter Elliot, Esq.
R. W. Chatfield, Esq.	Lord Arthur Hay,
R. Cole, Esq.	Rev. G. Knox,
J. Dent, Esq.	J. C. Morris, Esq., and

Captain W. K. Worster.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Wednesday, the 21*st February*, 1844.

The Secretary lays before the meeting two letters received from the Society's Booksellers.

Resolved,—That a Sub-Committee be appointed, consisting of Messrs. J. C. Morris, Walter Elliot, and R. Cole, for determining on the papers to be published in the Society's Journal, and for forwarding the publication of the same.

The Secretary having brought to the notice of the meeting, that the expense in forwarding by post to Captain Newbold the Inscriptions belonging to him would be considerable;

It is resolved,—That the Chief Secretary to Government be requested to frank the parcels containing the Inscriptions for transmission to Captain Newbold.

Read the following letter from the Rev. W. Taylor, dated 19th February, 1844.

To

The Secretary Madras Literary Society.

&c. &c. &c.

Sir,

I have the honor to forward by desire of Rev. H. Gundert of Tellicherry, a Lithographic copy of his Digest of the *Kerala Ulpatti*, a well known historical work in the Malayalam language, for the acceptance of the Madras Literary Society. An extract from his letter to me of 8th

August, 1843, accompanies an explanation, and I shall be happy to transmit copy of his somewhat fuller analysis of the work, should such be deemed desirable.

MADRAS, Pursewaukum, *February* 19*th*, 1844.

I have the honor to be, &c.
(Signed) W. TAYLOR, *Missionary.*

EXTRACT.

"The ground on which I take this freedom is your having laid me under real obligations in your reports of the Mackenzie MSS. which first led me to search for Malayalam historical manuscripts. I obtained in the course of these four years above a dozen of such, and tried to restore the original text, at least in those parts which merited the attention of an European—much that is not original, deserved in my opinion to be preserved in brackets, either for the elucidation of portions treated too briefly, or in order to make the manuscript, by variety of style, more interesting to the student of the language. The result has been this little compilation.

"(Signed) H. GUNDERT."

Resolved,—That in communicating the thanks of the Society to the Rev. H. Gundert for the same, he be informed that the Society would feel much obliged to him for his analysis of the work.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Friday evening, the 22*d March*, 1844.

Read the following letter from the Rev. W. Taylor, dated 22d February, 1844, transmitting at the suggestion and request of Walter Elliot, Esq., a paper on some Malayalam inscriptions by the Rev. H. Gundert.

To

The Secretary Madras Literary Society.
&c. &c. &c.

SIR,

At the suggestion and request of Walter Elliot, Esq., I have the honor to transmit to you the accompanying paper on some Malayalam antiquities by the Rev. H. Gundert of Tellicherry, received by me from him last month, with his letter to me dated 2d ultimo, giving me permission to make the present use of the paper, if I thought proper, after it had been seen by Mr. Elliot.

I allow a few pencilled notes of mine to remain in the margin. I had once intended to found on them a few written annotations, but on considering that they would not lead to any important conclusion, I prefer allowing the Editor of the forthcoming Journal to make use of them, if he may think proper to do so.

I have the honor to be, &c.

PURSEWAUKUM, *February* 22*d*, 1844. (Signed) W. TAYLOR, *Missionary.*

Resolved,—That it be referred to the Sub-Committee of Papers.

[Printed in No. 30 of the Journal.]

Read the following letter from Captain T. J. Newbold, dated Kurnool, 24th February, 1844.

Kurnool, February 24*th*, 1844.

MY DEAR MR. MINCHIN,

I should be very much obliged if you could allow me the use for a few days of the following books from the Library at the College, viz. DeLambre's Histoire del' Astronomie Ancienne, Asiatic Researches, Vols. II. and IX.

If they can be spared, please tell Mr. Bantleman to send them to Griffiths, who will forward them to me by cooly—they shall be returned by the same cooly—I only require to make a reference.

I sent the Madras Society lately a specimen of some interesting Foraminifera found in the chert and jasper of the diamond limestone, which I trust has been received and placed with the rest of the specimens in your museum. I have sent specimens to my friend Col. Sykes, and to Lonsdale, late Secretary Geological Society, to be examined. The Madras Society shall have the result as soon as communicated.

Has the Society come to any determination anent the Mackenzie MSS. in the Library at the East India House?

I presume there is no hope of a Museum of Economic Geology being formed at Madras.

(Signed) T. J. NEWBOLD.

Read the following letter from the Secretary to Government, dated 2d March, 1844.

No. 212.

To

The Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society.

GENTLEMEN,

Public Dept. I am directed by the Most Noble the Governor in Council to draw your attention to the communications from this Department, of

1st November, 1841. No. 952. 23d March, 1843. No. 264.

the dates noted in the margin, and to request that you will supply the information therein solicited, and furnish the specimens of the porcelain clay, and of the deposit containing fossils required by the Government of India.

I have the honor to be, &c.

FORT ST. GEORGE, *2d March*, 1844. (Signed) J. F. THOMAS, *Secretary to Government.*

Resolved,—That the Sub-Committee be requested to prepare a report for submission to Government.

Read a letter from R. W. Chatfield, Esq., dated 15th March, 1844. Stating that he has been nominated to a situation in the Mofussil, and regrets therefore the necessity of being obliged to resign his post as a Member of the Committee.

Resolved,—That the following works be ordered out from England for the Society.

Professor Forbes' Work on Glaciers.

The Linnæan Translations; and to make inquiries for a set of the early volumes.

That with reference to the Resolution of the 21st February last, the British Critic be again ordered.

Proposed by J. Dent, Esq., and seconded by the Rev. G. Knox.

That no order or standing Rule of the Committee be rescinded or altered without a month's previous notice.

Two letters received from the Society's Booksellers, dated 30th and 31st January, 1844, are also laid before the Meeting.

Read a letter from John Sullivan, Esq., dated 2d February, 1844, stating that he had taken steps for replacing the missing volumes of Buffon and Montesquieu.

Proposed that Messrs. Morris, Knox, and Worster, be formed into a Sub-Committee for the purpose of improving the circulation of the periodical publications.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Monday evening, the 22d April, 1844.

Read the following letter from the Secretary to Government, dated 30th March, 1844.

To

The Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society in London.

Gentlemen,

In acknowledging the receipt of your Secretary's communication on the subject of the formation of a Museum of Economic Geology at this Presidency, I am desired to inform you, that the Government have resolved to submit the proposition for the consideration of the Honorable the Court of Directors.

Public Dept. dated 10th Nov., 1843.

I have the honor to be, &c.

Fort St. George, 30*th March*, 1844.

(Signed) J. F. Thomas, *Secretary to Government.*

The Secretary lays before the Meeting a letter from the Society's Booksellers, dated 29th February, 1844.

Resolved,—That the following works be purchased for the Society in order to complete the Society's copies.

The London, Edinburgh and Dublin Philosophical Magazine, from May, 1842.

Asiatic Researches, Volume 16th, and those published after the 18th.

Journal of the Asiatic Society of Bengal, several odd Numbers.

Journal of the Royal Asiatic Society of Great Britain and Ireland, from No. 14.

Resolved,—That the Athenæum, Literary Gazette, and Examiner, be kept only three days by each Member of the Committee.

Mr. Walter Elliot in the name and at the desire of Lord Arthur Hay, lays on the Table a Copy of Wilson's and Buonoparte's Illustrations of American Ornithology, in Folio, with coloured plates. By Captain Thomas Brown.

Resolved,—That the thanks of the Society be presented to Lord Arthur Hay, for his munificent gift.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Saturday evening, the 8th June, 1844.

Read the following communication from the Secretary to Government in reply to the application of the Society of the 23d September last.

PUBLIC DEPARTMENT.
No. 435.

Extract from the Minutes of Consultation, dated 3d May, 1844.

Ordered that a copy of this dispatch be furnished to the Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society in London, with reference to their Secretary's letter of the 23d September, 1843.

No. 6, of 1844.

Our Governor in Council at Fort St. George.

1. We now reply to your letter in this department, dated the 12th October, No. 22, of 1843, para. 2, in which you have forwarded a communication from the Madras Literary Society and Auxiliary of the Royal Asiatic Society of London, suggesting the transmission to that Presidency of a number of manuscripts in the languages of Southern India, now in our Library, and believed to form the most valuable part of the collection of the late Colonel Colin Mackenzie, for the purpose of having translations of the most interesting of them effected, under the supervision of the Society, and published, either in their own Journal, or in that of the Parent Society.

2. The Society is in error in supposing that the manuscripts in question, ever formed part of the Mackenzie collection. Such of the manuscripts, collected by Colonel Mackenzie, as were original statements, and reports, were sent from Calcutta to Madras, many years ago; such manuscripts as belonged to the literature of the Deckhin were catalogued, and described by Professor Wilson, with the assistance of the Natives on Colonel Mackenzie's establishment, and are in our Library, but they are not the books intended. The manuscripts, to which the application refers, are those which were partly catalogued by Mr. C. P. Brown, of the Madras Civil Service, when in England, as stated by him in the note, accompanying the letter from the Secretary to the Literary Society of Madras, and were collected chiefly by the late Dr. Leyden, whose Oriental Manuscripts were purchased by the Company. They are written in the languages and characters, current in the South of India, and have been only imperfectly catalogued, many of them being ill written, in bad condition, and not easily decyphered, even by European Scholars, acquainted with the languages in which they are composed.

3. As also proficiency in the Tamil, Canarese, and Telugu languages, is not common in this country; and manuscripts in those languages rarely find readers, if there be any thing of value in the works, it will be dis-

covered only at Madras, where Native assistants are to be had. We therefore accede to the application of the Society, and shall transmit the entire collection, on condition, that should any descriptive account or translations of them be prepared, copies of such descriptions or translations be sent for our Library.

We are, &c.

LONDON, 6th March, 1844. (Signed) JOHN COTTON, JOHN SHEPHERD, &c. &c.

(True copy and extract.)

(Signed) J. F. THOMAS,
Secretary to Government.

Read a letter from Messrs. Wm. H. Allen and Co., dated 6th April, 1844, advising the despatch of a case of books per *Mellish.*

Resolved, with reference to the mistake of the Booksellers in sending out the original large work of Ehrenberg instead of the smaller English edition ordered; and observing that the letter of 12th December, 1843, does not specify the Committee's order with sufficient clearness—That hereafter the Meetings of Committee be fixed at an earlier date than at present, so as to allow of all drafts being circulated and passed by the Members before despatch.

Read the following letter from Captain T. J. Newbold, dated 19th May, 1844.

To

The Secretary M. B. Royal Asiatic Society.

SIR,

I have the honor to request you will have the goodness to return my best thanks to the Society for permitting me the use of the books named in your letter of the 2d ultimo, now under acknowledgment; and also for the 24 Nos. of the Society's Journal, which I conclude are for Mr. Garcin de Tassy; and which if I do not hear from you otherwise, regarding their disposal, I shall forward to him.

I have also to express to the Society the gratification and pride I have experienced in receiving its thanks and approbation, as expressed in your letters of the 25th August, 1843, and 27th February, 1844.

I have the honor to forward for presentation to the Museum, specimen of jasper and chert imbedding foraminifera, and also two small specimens of coal from Kotah, about 10 miles up the Panheeta river above its confluence with the Godavery. It occurs as a vein in the argillaceous limestone associated with the sandstone dipping at a low angle to the N. E. It is curious as being the only specimen of a coal vein in this part

of India occurring in limestone—eighty-five miles N. W. of this locality, anthracite occurs, in the sandstone of Duntumnapilly, in a bed 200 feet long and with a maximum breadth of 3 feet.

The present specimen though lamellar in structure, I find to be clearly distinguished from anthracite by inferiority in specific gravity, greater softness, absence of all metallic lustre, and containing bitumen.

It is distinguished from lignite by not presenting traces of vegetable, fibre, or organic structure; its emitting a coal-like (instead of a pitch-like) odour when burnt. Its structure is lamellar; fracture slaty; tough; hardness between 1 and 2, Mohs; opaque; lustre dull; colour grayish black and brownish black; touch rather meagre; odour slightly bituminous; streak brownish black; specific gravity from 1. 154 to 1. 260.

It contains 49 per cent. of volatile matter (Derbyshire Cannel coal contains 47); the residue I found chiefly carbon, silica, iron, and a little carbonate of lime derived doubtless from its matrix.

It burns briskly with considerable flame and smoke and coal-like odour, leaving a softish gray ash.

It is evidently neither an anthracite nor a lignite, and may be classed as "slate-coal."

Dr. Walker of the Nizam's Service, has the merit of discovering its site, and to him I am indebted for the specimens I examined.

KURNOOL,
May 19*th*, 1844.

I have the honor to be, &c.
(Signed) T. J. NEWBOLD.

Resolved,—That the thanks of the Society be given to Captain Newbold for the above.

Read a letter from the Secretary to the Asiatic Society of Calcutta, stating that the Society can furnish Vols. 16, 19, and 20 of its transactions, and Nos. 25 and 26 of its Journal, for Rupees 34, the earlier numbers of the latter being out of print are not procurable. Recorded.

Resolved,—That the following works be ordered out from England for the Society.

Loudon's Encyclopædia of Trees and Shrubs, £2-10.
Loudon's Encyclopædia of Agriculture, £2-10.
Loudon's Encyclopædia of Plants, £3-13-6.
Loudon's Encyclopædia of Cottage, Farm, and Architecture, £3-3.
Southey's Life of Nelson.

Resolved,—That the Booksellers be requested to ascertain and report at what cost the Society's set of the Philosophical transactions can be completed—they now possess from 1818 to 1839, the first part of 1821 is wanting.

Likewise that they be requested to endeavour to dispose of the copy of Ehrenberg's Infusioria, despatched by the *Mellish*, which was ordered by mistake instead of *Prichard's Account* of Ehrenberg's Discoveries, and which, in the event of the other being sold, they would desire to have sent out.

Resolved,—That Mr. Bantleman be authorized to bid at Miller's sale of Books, on Monday next, for lot No. 10 as far as ten Rupees, and lot 27 (Eusebii Opera) as far as fifteen or twenty Rupees.

Mr. Walter Elliot laid a letter from Mr. Pharoah before the Committee, complaining that the publication of the Journal had been given to another Press; and stated that he had informed Mr. Pharoah in reply, that the Committee having invited tenders for the publication from the principal presses, including Mr. Pharoah's, had accepted the lowest.

Mr. Walter Elliot read a letter from Mr. R. Clarke forwarded by Captain Newbold, in which he says that no communication had been received by the Royal Asiatic Society on the subject of the Mackenzie MSS. Captain Newbold proposes that an application should be made for those in the Southern dialects to be sent out to the Madras branch for examination and translation.

Ordered to be discussed at the next meeting.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Saturday evening, the 6*th July*, 1844.

Read a letter from Messrs. Wm. H. Allen and Co., dated 13th April, 1844, advising the despatch of books per *Samarang*.

Read the following letter from the Secretary to Government, dated 11th June, 1844.

To

The Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society.

Sir,

Public Dept. I am directed by the Most Noble the Governor in Council, to transmit to you the accompanying copy of the Madras Meteorological Observations recently published at this Presidency.

I have the honor to be, &c.

Fort St. George, 11*th June*, 1844.

(Signed) J. F. Thomas,
Secretary to Government.

Resolved,—That the thanks of the Society be offered for the same.

Read the following letter from Captain T. J. Newbold, dated Kurnool, 15th June, 1844. Presenting to the Society specimens of a recent fresh water fossil deposit from the vicinity of Hungabunda, Kurnool territory, and also a few from a somewhat similar deposit near the Mudaletty temple on its southern border, with the Banganpillay jaghire.

Resolved,—That the thanks of the Society be conveyed to Captain Newbold, for the above specimens.

Read the following letter from the Secretary of the Mathematico-physical Class of the Royal Academy of Bavaria, dated Freyberg, 15th March, 1844.

Academia Literarum et Scientiarum regia Monacensis ad Academiam quae dicitur. "Literary and Philosophical Society of Madras."

Cum academia nostra non solùm suis ipsa viribus, quantum fieri potest, solidae doctrinæ terminos promovere, sed etiam ea omnia accurate cognoscere, et in usus suos convertere studeat, quæ ab aliis academiis in diversis litterarum et scientiarum provinciis inveniuntur, aut jam inventa excoluntur et ornantur, in conventu suo decrevit, ut numerus exterarum academiarum, quibuscum talem studiorum communionem jam inivimus accessione earum augeatur, ex quarum consortio fructus, qui e tali societate nasci solent, largiores et optabiliores expectare potest.

Itaque academiam vestram quae in saluberrimo litteras et scientias promovendi studio insignem locum obtinet, ad hanc societatem nobiscum in eundam invitamus. Quod si gratum fuisse audiverimus, mittentur ad eam, ex libris academia nostra editis, omnes illi, quos ei gratas fore cognoverimus: simulque omnes qui in posterum edentur, petimusque, ut item nobis academia vestra praestare velit in libris qui ab ipsa publicati sunt, aut in posterum publicantur.

Libri nobis destinati commodissime ad academiam nostram pervenient, si per librarios mittentur, quorum nomen his litteris subjunximus.

VALETE,
Monachium, 15 *Martii*, 1844.
Freyberg.

SIR,

I have the honor of adding to the letter above of the President of the Royal Bavarian Academy, that being charged with the foreign correspondence, I should be exceedingly gratified by receiving a detailed instruction how a regular correspondence between the Madras Society and our Academy is to be conducted. Letters may perhaps be sent on the most convenient way overland, directing them to the British Consul at Trieste. Communications of a greater extent will find their expedition

at London, if directed to Mr. W. Pamplin, Junior, Queen Street, Soho 9; this person being the Academy's Commissioner for Great Britain, and ready also to take under his care the parcels which are destined for your Society. Being favored with your kind reply, I shall direct to you the Almanac of our Academy, from which you may choose those of our publications which you find convenient. On the other side we shall be exceedingly happy to receive a complete set of your publication.

Allow me to express that I expect to derive much instruction and enjoyment from such a mutual intercourse with your illustrious Society, and that I shall be happy to be serviceable to it.

Believe me, with high respect, Sir,
Your most obedient humble servant,
(Signed) D. V. Martius,
Secretary of the Mathematico-physical Class of the Royal Academy of Bavaria.

Munich,
14*th March*, 1844.

Read a letter from the Secretary to Government, dated 29th June, 1844.

To

The Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society.

Gentlemen,

Public Department. I am directed by the Most Noble the Governor in Council, to transmit to you the accompanying copy of the 6th volume of the Madras Astronomical Observations, recently published at this Presidency.

I have the honor to be, &c.
(Signed) J. F. Thomas,
Secretary to Government.

Fort St. George,
29*th June*, 1844.

Resolved,—That the thanks of the Society be returned for the same.

Read a letter from J. Western, Esq., dated 22d June, 1844, forwarding a list of new works, and complaining of a paucity of books of light reading in circulation, which was taken into consideration.

Mr. Elliot having brought to the notice of the Committee, that the wall concealing the inscription in the Varaha Swami Temple at the Seven Pagodas, mentioned by Dr. Babington in the Transactions of the Royal Asiatic Society, Vol. II. p. 263; and for removing which the Pujaris formerly asked an exorbitant sum, might now be taken down and rebuilt for 30 Rupees.

Resolved,—That this sum be raised by a subscription of 3 Rupees each by the Members of the Committee, for the purpose of laying open and copying the inscription.

With reference to the subject brought forward at the last meeting on Captain Newbold's letter, forwarding a communication from Mr. Richard Clarke, Secretary Royal Asiatic Society, regarding the Mackenzie MSS.

Resolved,—That the Secretary be requested to address the Secretary of the Royal Asiatic Society on the subject of the Mackenzie MSS.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Tuesday evening, the 13*th August*, 1844.

The Secretary lays before the Meeting the following letter drawn up by the Rev. G. Knox, in reply to the President of the Munich Academy.

Societas Literarum et Scientiarum Madrasensis, ad Academiam Literarum et Scientiarum Monacensem.

Libentissime legimus literas vestras ex quibus facile intelleximus quam acri ac strenuo animo societas vestra in scientiæ pervestigatione atque in omni varietate literarum versata sit. Quapropter nobis gratissimum fecistis quod et societatem nostram in adjutorum vestrum numerum cooptare decreveristis.

Veremur tamen ut quam minime existimationi vestræ satisfacere possimus; neque nobis in æstu rerum publicarum assidue laborantibus fructus otii datus est ad bonas artes promovendas inter nosque recolendas.

Paucis tamen pro viribus operam dedimus quæ ad annales, quæ ad literas, quæ ad mores, quæ denique ad regiones Indorum spectant; hæc omnia in Diarium nostrum conferre solemus.

Vobis igitur hujus Diarii exemplar, quam absolutissimum per librarios vestros transmittere curavimus; hoc munusculum, pignus benevolentiæ, officiorum mutuorum primitias esse volumus.

Quodsi e cætu literatorum vestrûm sint qui rerum Orientalium studiosi, in his rebus explicandis auxilio indigeant, quod nobis in his Orientis partibus commorantibus, præsto afferendum sit, nihil gratius facere nobis poterunt, quam ut studia hæc cum nobis communicent. Itaque ut faciant etiam atque etiam rogamus.

VALETE. MADRAS.

Read the following letter from H. Piddington, Esq., Sub-Secretary of the Asiatic Society, dated 12th July, 1844—forwarding a Bill of Lading for a parcel of books transmitted to the Society per Steamer. Recorded.

Resolved,—That the following works be ordered out from England for the Society:—

The Public and Private Life of Lord Chancellor Eldon, by Horace Twiss, Esq.

Narrative of a Voyage of Discovery and Research in the Southern and Antarctic Seas, by Captain Sir James Ross.

Life of the late Lord Hill, by the Rev: Edward Sidney.

Lord Mahon's History of England.

History of England under the Anglo-Saxon Kings, from the German of Lappenberg, by B. Thorpe Murray.

History of Painting in Italy, from the German of Kugler—Edited by Eastlake.

Brummell's Memoirs.

Churchill's Poems, by Tooke Pickering.

Adair's Memoirs of the Court of Vienna.

Biographical Dictionary of the Society of Useful Knowledge.

Sir C. Bell's Anatomy of Expression.

Lady Willoughby's Diary.

Western Barbary, by J. H. Drummond Hay.

Seventh Report of the Massachussett's Board of Education, by H. Mann.

The Young Student, by Mad. Guizot.

Siborne's Battle of Waterloo.

Sir Walter Scott's Poetical Works, a good second-hand copy.

The Calcutta Review, to be procured from Bengal.

Resolved,—That a Circular embodying the four first pages of the Society's Catalogue be printed, inviting gentlemen to become Members of the Society.

Mr. Thorpe's account for printing the 30th Number of the Society's Journal is laid on the table.

Resolved,—That Mr. Bantleman be requested to take steps for collecting the subscriptions on account of the Society's Journal.

Mr. Walter Elliot reads the following extract of a letter from Captain T. J. Newbold, requesting the aid of any Member of the Committee in preparing a magnified drawing of the fossil foraminifera.

"That the subject of Indian Geology is gaining ground is evident. A few days ago, I received a letter from General Fraser, enclosing me some queries from General Briggs, viséd, by De la Beche and Phillips, regarding the existence of boulders in S. India, which I have answered to the best of my ability. The supposed boulders in the vicinity of Hyderabad and Puttuncherroo, (mentioned by Brongniart on the authority of De Luc, I think,) I examined particularly several years ago, and found them of granite, similar to the granite on which they reposed, and therefore *not* boulders in the geological sense of the term. Their rolled appearance is

owing to a process of concentric exfoliation, I have described elsewhere. True erratic boulders, *like those I have* seen in the North of England, *I have never met within India*, and looked for them in vain on the shores of the Red Sea, Mediterranean, in Egypt, and Arabia Petræa. Their absence in these regions, tropical and sub-tropical, tends to corroborate the theory of floating ice-bergs, having been mainly instrumental in the transport of the vast masses of debris, and vast erratic blocks we see in the northern parts of Europe. It is well known that the usual course taken by ice-bergs from the confines of the Polar circles of eternal congelation is towards the temperate latitudes, and that they dissolve and discharge their burthen of earthy and rocky debris, long before they can arrive at the hot regions of the equator. Hence this comparative rarity of the boulder formation in warm countries. Passing south of the equator, we again find the boulder formation, in the cold regions of Chili and Patagonia. We may find drift pebbles, here and there resting on rocks of a different description in S. India, but as far as my observation extends, true boulder beds, similar to those of N. Europe and the more southerly latitudes of America, do not exist either here or in those parts of Egypt and Arabia, which I have visited. However as the observations of a single individual are not to be supposed as sufficient to disprove the possibility of such formations existing in S. India, and in order to carry out General Briggs' wishes to the utmost, I have enclosed the copy of his queries and remarks for submission to our Physical Committee, or the Society at large, requesting that they would have the kindness to communicate any information in their power on this interesting subject, either directly to General Briggs, General Fraser, or to myself. Would you kindly submit them through the usual channel for the remarks of the Committee.

"Mr. Piddington, I perceive, No. 61 of the Bengal Journal Proceedings Asiatic Society, January, 1844, p. 6, has at once pronounced the organic bodies in the diamond limestone interstratified cherts nummulites. I ventured only so far as to class them among Foraminifera, and this *still* with hesitation. I sent a specimen up to General Fraser requesting he would apply his powerful microscope to the elucidation of their structure. The enclosed drawing is the result. It will be seen that the convolute cavity, divided into cells spirally arranged of the nummulite is by no means clearly shown. Perhaps the septa dividing the cells may be more distinct in the specimens I have forwarded to the Society and to yourself. Would you kindly submit them with the drawing to the Society, or the Committee, with the request that any Member possessing a good microscope will examine and give a faithful drawing of the interior structure of the best de-

fined of these curious bodies. He will find the interior structure of the nummulite described in Sowerby's Mineral Conchology in the Library.*

Oriental Club, London, 26th March, 1844.

My Dear Fraser,

It is many, many years since we met, but it is unlikely that you should have either so entirely lost sight of me, that all recollection of me or of my career should have entirely escaped you.

The subject of the accompanying Memorandum, of which I send you a few copies, has excited considerable interest in this quarter of the world. Wherever boulders have been found in Europe, they have been considered as productions foreign to the localities where they now exist; and they are by some believed to have been brought to their present situation by ice-bergs, while the land was still submerged below the ocean; while others ascribe them to the ordinary consequence of rolled masses of rock hurried along by the force of aqueous currents. The glacial theory has in Europe many converts; but such a theory, to which I among others do not yield my assent, must be shaken if we should find that the boulders in India present the same peculiarities as those of Europe, namely, as to shape and difference of geological structure from any very contiguous rocks or hills.

General Morrison, with whom I was speaking on this subject three nights ago, conceives the boulders to be mere detached or fallen pieces of contiguous hills, which have assumed their present shapes from the effects of climate. To adopt this opinion, we must first have proof of the construction of the boulders, and any contiguous rocks being identical (and of which specimens alone can show); and also it must be demonstrated that the elements acting on sharp masses will have the effect of rendering them round (as if they had been submitted to rotatory attrition.) I have no theory on the subject, but we want well attested facts from eye-witnesses, with their opinions if they choose to give them, to enable geologists in Europe to come to some more satisfactory conclusion than has, I think, yet been arrived at.

I am not aware whether among your other scientific pursuits, you have included geology as one of them; but this I feel certain that whenever

* These when examined under a very powerful microscope by a member of the Committee (Captain Worster) proved to be nothing more than minute spherical bodies composed of concentric lamellar coats formed round a nucleus in the centre. Several specimens of the chert were ground down, so as to give sections of them in every possible direction, and they uniformly presented the same series of four or five concentric rings, without any appearance of organic structure whatever. Drawings of these were forwarded to Captain Newbold.

the promotion of science is concerned, in whatever shape you as a disciple of the school will be willing to lend your aid in the attainment and diffusion of knowledge. My relative, John Bird, now in Council at Madras, or Mr. Malcolmson, of the house of Forbes and Co., of Bombay, will receive and forward to me any little box or boxes of specimens, according to the Memorandum which you may be able to make up for me.

I am, &c.

(Signed) JOHN BRIGGS.

Memorandum drawn up by Major General Briggs, and submitted for approval to Sir H. De la Beche, F. R. S. and F. G. S., and John Phillips, Esq., F. R. S. and F. G. S., Professor of Geology in the Royal Institution of London and University of Dublin.

BOULDERS IN THE PENINSULA OF INDIA.

The occurrence in various parts of the globe of large rounded isolated blocks of rock, denominated boulders, has excited much interest, and has given rise to more than one theory among geologists as to the cause of their form, and their actual position.

These boulders exist in several localities in the Peninsula of India, either lying singly or in heaps, and are often found superposed one on another, without the intervention of any medium of connexion. Again, they are discovered cropping out from underneath the surface, and are not unfrequently met with (in digging for wells) several feet below the earth, but in all cases detached from any other rock.

They are to be seen at Puttencheroo, a town a few miles north of Hyderabad; at the latter place they abound in great quantities for several miles around that city; again at Muktul, on the road to the Ceded Districts, wherein they are also found; and they may be traced through several places in Mysore, especially at Bangalore and its vicinity.

Every information regarding the existence of these boulders, whether as to their size, their form, their geological structure, their situation, and their vicinity to any hills of similar structure, is of great interest. Hand specimens of the boulders and of the adjacent rocks, each marked separately, are desirable, and any geological description of the locality would be valuable; but as the latter desideratum can only be furnished by a competent geologist, it is neither to be expected, nor is it essential.

The specimens should be about two inches cube, which, with the required information might be packed in a small flat box, and sent to the Presidency by an early opportunity.

The date and place, with the name of the contributor of the information, are important to guarantee authenticity.

Resolved.—That Members of the Society who may be able and willing to communicate information on these points, be requested to forward it to the Secretary.

The Rev. G. Knox proposes that a Sub-Committee be nominated to see that Rule XIII. be duly carried out.

Mr. Knox offers himself to undertake this task.

At a Special General Meeting of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held at the Society's Rooms, at the College, on Thursday, the 3d October, 1844.

The Secretary read the following letter from C. P. Brown, Esq., dated 28th September, 1844.

My Dear Mr. Minchin,

You may remember that about three years ago, I prepared a list of the Manuscripts in the Literary Society Library. The books now received from Government, form part of the same collection: and I would suggest that both parts should be deposited together in the College Library, the whole being Government property. If you think there is no objection to this, I will make the arrangement, with a view to framing one complete list. Otherwise we shall occasionally find one volume of a book in one Library, and a second in another.

Your's very sincerely,

28th September, 1844. (Signed) C. P. Brown.

The Secretary then stated that the object for convening the present Meeting was to elect a Member for the Managing Committee in the room of R. W. Chatfield, Esq., who has left the Presidency.

It was then proposed by Walter Elliot, Esq., and seconded by the Rev. G. Knox.

That J. Ouchterlony, Esq. be elected a Member of the Managing Committee—carried unanimously.

The Meeting then adopted the following propositions:—

Proposed by Walter Elliot, Esq., and seconded by J. Shaw, Esq.

That it be referred to the Committee to report on the best mode for new modelling the system of circulating the Periodicals amongst the Subscribers—carried unanimously.

Proposed by W. A. Serle, Esq., and seconded by T. S. Smyth, Esq., and the Rev. G. Knox.

That the President and Vice Presidents be considered as ex-officio Members of the Committee—carried unanimously.

Proposed by J. Shaw, Esq., that three numbers of the *Athenæum* and *Literary Gazette* be ordered; but on the suggestion of Sir E. Gambier, this motion was withdrawn; Dr. Shaw requesting that it might be taken into consideration by the Committee.

Proposed by T. S. Smyth, Esq., and seconded by Captain Cramer.

That it be referred to the Committee to consider whether the proportion of modern Novels by the less established authors might not be advantageously reduced—carried unanimously.

Proposed by Walter Elliot, Esq., and seconded by G. Harding, Esq., and W. A. Serle, Esq.

That special Meetings shall only be summoned by order of the President, either by request of the Committee of Management, communicated through the Secretary, or by a written requisition of not less than ten Subscribers; that the object or objects for which such Meeting is called, be specified in the notice, and that the business of the Meeting be strictly confined thereto—carried unanimously.

The business of the Meeting being concluded, the thanks of the Meeting were unanimously voted to the Honorable the President.

At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, held on Monday evening, the 21*st October*, 1844.

Read the following letter from Mr. G. De Tassy, dated Paris, 9th August, 1844.

9 *Avril*, 1844.

Monsieur,

J'ai eu l'honneur de recevoir, votre lettre du 20 Fevrier passé et je vous remercie et vous prie de faire agréer, a la Societé Litteraire a Madras, mes remerciments empressés pour les 2 volumes de Mille et une nuits en Hindostani qu'elle a bien voulu m'accorder.

J'ai l'honneur de remercier aussi d'une maniere particuliere, Mr. Walter Elliot, pour les trois exemplaires qu'il veut bien m'envoyer en m'autorisant d'en faire cadeau a mes amis amateurs dela litterature Hindostani Je me propose d'en offrir un exemplaire de sa part à l' institut Royal de France, et de reserver les deux autres pour des particuliers.

Je dois vous dire du reste que *je n'ai pas encore reçu*, cet envoi, et que je n'en ai aucune nouvelle; je me flatte néanmoins qu' il ne sera pas perdu.

Je prends la liberté de vous prier, instamment, de me procurer le *Catalogue Lithographé dès manuscrits Persans et Hindostanis de la Bibliotheque de la Societé litteraire de Madras* (Branch of the Royal Asiatic Society.)

Il est impossible de la procurer en Europe, et il est pour moi de plus grand interet de la posséder.

Je desirerais bien avoir aussi un petit volume imprimé a Madras, en 1837, et intitulé; *a Digest of the different castes of India with an account of them by C. V. Ramasawmie.*

Je vous prie déxcuser mon indiscrétion, et d'agréer l'assurance du parfait devouement avec le quel j'ai l'honneur d'etre, Monsieur,

53 *Rue St. André Desarts,* *Paris.* Votre trés humble serviteur,
(Signé) GARCIN DE TASSY.

Resolved,—That the books required by Mr. G. De Tassy, be procured and forwarded to him; but the Committee are not aware of the existence of the Catalogue referred to.

Read a letter from Messrs. Wm. H. Allen and Co., dated London, 2d August, 1844—acknowledging the receipt of the first of a set of bills for £ 100, and advising the despatch of the July and August periodicals per Steamer, through Messrs. Line and Co.

Read a letter from Captain T. J. Newbold, dated 9th August, 1844—presenting to the Society a few specimens from some caves in the limestone rocks of Billa Soorgum, Kurnool territory, among which is a gypseous bone breccia, a red indurated marl or mud resembling that of the celebrated Kirkdale caves in Yorkshire, and a few fossilized bones.

Resolved,—That the thanks of the Committee be given to him.

Read a letter from M. Annuntachary Bramin, dated 18th August, 1844—forwarding some Sanscrit verses in praise of the British Government.

Resolved,—That the thanks of the Committee be given to him.

Read the following letter from the Secretary to Government, dated 30th August, 1844.

Public Department.

No. 795.

Extract from the Minutes of Consultation, dated 30th August, 1844.

Read the following letter from the Acting Secretary to the Marine Board.

Requests instructions as to the disposal on their arrival from England, of the 11 cases of "Oriental Manuscripts, consigned to this Presidency, on the *Duke of Cornwall,*" by the Honorable Court of Directors.

The Marine Board will be pleased to deliver to the Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society in London, the Oriental Manuscripts alluded to in the foregoing letter, on their arrival from England.

(A true Extract.)

(Signed) J. F. THOMAS,
Secretary to Government.

Read a letter from Captain J. Robertson, dated 3d September, 1844, stating that though a first class Subscriber, the *Literary Gazette* has never been forwarded to him.

Read a letter from T. S. Smith, Esq., dated 4th September, 1844—stating that his honor Mr. Justice Burton will have great pleasure in becoming one of the Vice Presidents of the Society.

Read a letter from Lieutenant Arthur Stevens, dated 5th September, 1844—forwarding at the request of Captain Cotton, some stones found on the hills near Kimedy, by Captain Glover.

Read a letter from J. Shaw, Esq., dated 18th September, 1844—requesting that the *Literary Gazette* and the *Athenæum* may hereafter be circulated to him, as the other periodicals.

Resolved, with reference to this communication and that from Captain Robertson,—That two copies of each of the above publications be ordered, and that both be circulated to the first class Members of the Society after their perusal by the Committee.

Read letters from R. Cole, Esq., dated 18th October, 1844, and M. Lewin, Esq., dated 21st October, 1844—tendering their resignations as Members of the Committee.

Resolved also,—That the following letter be addressed to the Secretary of the Munich Academy.

To

M. Von Martius,

Secretary of the Royal Academy of Bavaria.

Sir,

In acknowledging the receipt of your letter of the 14th March last, and in compliance with the request therein contained, I am instructed by the Managing Committee of the Madras Literary and Auxiliary of the Royal Asiatic Society, to inform you, that Messrs. W. H. Allen and Co., the Society's Booksellers, will be instructed to forward to your London Agent, Mr. W. Pamplin, Junior, a parcel for your Academy, containing, with the exceptions of Nos. 2, 3, 4, 12, and 13, which are out of print, all the other Numbers of the Madras Journal of Literature and Science. This channel, the Committee think, would best facilitate the interchange of communications between the Society and your Academy. I am also instructed to add that the Society would be happy to forward the views of your Academy in any manner in which it may require the Society's services. In conclusion, I beg to state that the Society would be happy to obtain a copy of your Almanac.

I have the honor to be, &c.

(Signed) J. Minchin,
Secretary M. L. Society, &c.

Madras,
21*st October*, 1844.

Resolved,—That the following books be ordered out from England, for the Society.

Diary and Correspondence of James Harris, first Earl of Malmsbury.
The Popular Member, by Mrs. Gore.
Home Scenes and Recollections, by Lady Chatterton.
Fanny Kemble's Poems.
Roman Traitor, by the author of "Oliver Cromwell."
Memoirs of Conquesbed a Berual Deaz, translated by J. L. Lockhart.
The Dark Ages, by the Rev. S. R. Maitland.
Correspondence of Edmund Burke, by E. Fitzwilliam, 4 vols.
Hyde Marston, by Craven.
Tarlton's Jests out of Purgatory, by J. O. Hallewell.
Life of W. Beckford.
Adventures of an Officer in the service of Runjeet Sing, Edited by Major Lawrence, Assistant to Political Agent at Luknow.
Mrs. Abell's Recollections of the Emperor Napoleon.
History of Partisan Corps, under Colonel Simcoe.
The Life and Times of Richard the 3d, by Miss Halstead.

At a Meeting of the Managing Committee of the Madras Literary Society, and Auxiliary of the Royal Asiatic Society, on Wednesday Evening, the 20th November, 1844.

Read a letter from Messrs. Wm. H. Allen and Co., dated London, 26th June, 1844—stating that they can procure for the Society a complete set, as far as 19 volumes, of the Linnæan Transactions, for £ 18 0 0.

Read a letter from the Secretary to Government, dated 1st November, 1844—transmitting a printed list of Desiderata of Medicinal Plants extracted from the Flora Medica of Dr. Lindley.

Resolved,—That the thanks of the Society be communicated to Government for the same.

That with reference to Captain Gill's Mission to proceed to Adjunta, under the orders of Government at the recommendation of the Parent Society, that the aid and assistance of the Society be offered to him, and that he be requested to communicate to the Society such observations on the Temples of the Hindoos, as may in his judgment be deemed worthy of notice in the Society's Journal.

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At a Meeting of the Managing Committee of the Madras Literary Society and Auxiliary of the Royal Asiatic Society, on Friday Evening, the 20th December, 1844.

Read two letters from Messrs. Wm. H. Allen and Co., dated 9th September and 7th October, 1844—advising the despatch of books per the *John Line* and the *Emerald Isle*.

Read the following letter from the Secretary to the Bombay Geographical Society.

No. 51 of 1844.

To

The Secretary to the Literary Society,
Madras.

Sir,

I have had the pleasure at the Quarterly Meeting of this Society, held on the 7th Instant, to submit the work entitled "Madras Journal of Literature and Science, edited by the Committee of the Madras Literary Society and Auxiliary Royal Asiatic Society, June, 1844, No. 30," forwarded by you for presentation; and I am directed to convey to you the best thanks of the Society, for your very acceptable donation.

Geol. Society's Rooms,
Town Hall, Bombay,
15*th November*, 1844.

I have the honor to be, &c.
(Signed) Geo. Buist,
Secretary to the Society.

Resolved,—That the following books be ordered out from England for the Society.

The North British Review.
Cuvier's large Work "Les Ossemens Fossiles," second-hand copy.
Arago's Lives of Herschel and Watts.

Resolved,—That a letter be addressed to Messrs. Wm. H. Allen and Co., with reference to their letter of the 26th June last, on the subject of the Linnæan Transactions to the effect of the note on the Proceedings of the last Meeting.

Resolved also,—That Messrs. Wm. H. Allen and Co. be requested to inform us of the price of "Agassiz's Works."